SEQUENCE LISTING

<110> Genentech, Inc. Ashkenazi, Avi Botstein, David Desnoyers, Luc Eaton, Dan L. Ferrara, Napoleone Filvaroff, Ellen Fong, Sherman Gao, Wei-Qiang Gerber, Hanspeter Gerritsen, Mary E. Goddard, A. Godowski, Paul J. Grimaldi, Christopher J. Gurney, Austin L. Hillan, Kenneth, J. Kljavin, Ivar J. Mather, Jennie P. Pan, James Paoni, Nicholas F. Roy, Margaret Ann Stewart, Timothy A. Tumas, Daniel Williams, P. Mickey Wood, William, I.

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Ala Lys Lys Asn Phe Gly Gly Gly Asn Thr Ala Trp Glu Glu Lys Thr
Leu Ser Lys Tyr Glu Ser Ser Glu Ile Arg Leu Leu Glu Ile Leu Glu
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Gly Leu Cys Glu Ser Ser Asp Phe Glu Cys Asn Gln Met Leu Glu Ala
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Pro Asp Leu Phe Glu Trp Phe Cys Val Lys Thr Leu Lys Val Cys Cys
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1825

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| Val 225 | Thr | Pro | Gly | Phe | Cys 230 | Ile | Cys | Pro | Pro | Gly 235 | Phe | Tyr | Gly | Val | Asn 240 |
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| Суѕ | Glu | Ile 275 | Ser | Lys | Cys | Pro | Gln 280 | Pro | Cys | Arg | Asn | Gly 285 | Gly | Lys | Cys |
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His Asp Pro Gly

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Pro Pro Phe Pro Pro Ile Gln Gly Cys Met His Gly Gly Arg Ile Tyr
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Pro Val Leu Gly Thr Tyr Trp Asp Asn Cys Asn Arg Cys Thr Cys Gln
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24

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<212> DNA
<213> Homo sapiens
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<400> 23

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1 5 10 15

Leu Ile Leu Cys Cys Gln Thr Gln Tyr Val Arg Asp Gln Gly Ala Met 20 25 30

Thr Asp Gln Leu Ser Arg Arg Gln Ile Arg Glu Tyr Gln Leu Tyr Ser 35 40 45

Arg Thr Ser Gly Lys His Val Gln Val Thr Gly Arg Arg Ile Ser Ala 50 55 60

Thr Ala Glu Asp Gly Asn Lys Phe Ala Lys Leu Ile Val Glu Thr Asp 65 70 75 80

Thr Phe Gly Ser Arg Val Arg Ile Lys Gly Ala Glu Ser Glu Lys Tyr
85 90 95

Ile Cys Met Asn Lys Arg Gly Lys Leu Ile Gly Lys Pro Ser Gly Lys
100 105 110

Ser Lys Asp Cys Val Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr 115 120 125

Ala Phe Gln Asn Ala Arg His Glu Gly Trp Phe Met Ala Phe Thr Arg 130 135 140

Gln Gly Arg Pro Arg Gln Ala Ser Arg Ser Arg Gln Asn Gln Arg Glu 145 150 155 160

Ala His Phe Ile Lys Arg Leu Tyr Gln Gly Gln Leu Pro Phe Pro Asn 165 170 175

His Ala Glu Lys Gln Lys Gln Phe Glu Phe Val Gly Ser Ala Pro Thr $180 \,$ $185 \,$ 190

Arg Arg Thr Lys Arg Thr Arg Arg Pro Gln Pro Leu Thr 195 200 205

<210> 24

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide probe

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28

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<211> 24
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<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
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                                                                   24
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<211> 41
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
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ttaccatacg ccctcaggac gttccctcta gctggagttc tggacttcaa cagaacccca 180
tccagtcatt ttgattttgc tgtttatttt ttttttcttt ttctttttcc caccacattq 240
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caaatctgcg taagctggaa cggctggata tatccaacaa ccaactgcgg atgctgactc 1140
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Lys Ser Trp Leu Ile Ile Ser Leu Gly Leu Tyr Ser Gln Val Ser Lys
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Leu Leu Ala Cys Pro Ser Val Cys Arg Cys Asp Arg Asn Phe Val Tyr
Cys Asn Glu Arg Ser Leu Thr Ser Val Pro Leu Gly Ile Pro Glu Gly
                         55
Val Thr Val Leu Tyr Leu His Asn Asn Gln Ile Asn Asn Ala Gly Phe
                     70
                                          75
 65
Pro Ala Glu Leu His Asn Val Gln Ser Val His Thr Val Tyr Leu Tyr
                                      90
Gly Asn Gln Leu Asp Glu Phe Pro Met Asn Leu Pro Lys Asn Val Arg
                                                     110
            100
                                105
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Val Leu His Leu Gln Glu Asn Asn Ile Gln Thr Ile Ser Arg Ala Ala

120

115

125

- Leu Ala Gln Leu Leu Lys Leu Glu Glu Leu His Leu Asp Asp Asn Ser 130 135 140
- Ile Ser Thr Val Gly Val Glu Asp Gly Ala Phe Arg Glu Ala Ile Ser 145 150 155 160
- Leu Lys Leu Leu Phe Leu Ser Lys Asn His Leu Ser Ser Val Pro Val
 165 170 175
- Gly Leu Pro Val Asp Leu Gln Glu Leu Arg Val Asp Glu Asn Arg Ile 180 185 190
- Ala Val Ile Ser Asp Met Ala Phe Gln Asn Leu Thr Ser Leu Glu Arg 195 200 205
- Leu Ile Val Asp Gly Asn Leu Leu Thr Asn Lys Gly Ile Ala Glu Gly 210 215 220
- Thr Phe Ser His Leu Thr Lys Leu Lys Glu Phe Ser Ile Val Arg Asn 225 230 235 240
- Ser Leu Ser His Pro Pro Pro Asp Leu Pro Gly Thr His Leu Ile Arg
 245 250 255
- Leu Tyr Leu Gln Asp Asn Gln Ile Asn His Ile Pro Leu Thr Ala Phe 260 265 270
- Ser Asn Leu Arg Lys Leu Glu Arg Leu Asp Ile Ser Asn Asn Gln Leu 275 280 285
- Arg Met Leu Thr Gln Gly Val Phe Asp Asn Leu Ser Asn Leu Lys Gln 290 295 300
- Leu Thr Ala Arg Asn Asn Pro Trp Phe Cys Asp Cys Ser Ile Lys Trp 305 310 315 320
- Val Thr Glu Trp Leu Lys Tyr Ile Pro Ser Ser Leu Asn Val Arg Gly 325 330 335
- Phe Met Cys Gln Gly Pro Glu Gln Val Arg Gly Met Ala Val Arg Glu
 340 345 350
- Leu Asn Met Asn Leu Leu Ser Cys Pro Thr Thr Thr Pro Gly Leu Pro 355 360 365
- Leu Phe Thr Pro Ala Pro Ser Thr Ala Ser Pro Thr Thr Gln Pro Pro 370 375 380
- Thr Leu Ser Ile Pro Asn Pro Ser Arg Ser Tyr Thr Pro Pro Thr Pro 385 390 395 400
- Thr Thr Ser Lys Leu Pro Thr Ile Pro Asp Trp Asp Gly Arg Glu Arg

| | | | | 405 | | | | | 410 | | | | | 415 | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Val | Thr | Pro | Pro 420 | Ile | Ser | Glu | Arg | Ile 425 | Gln | Leu | Ser | Ile | His 430 | Phe | Val |
| Asn | Asp | Thr 435 | Ser | Ile | Gln | Val | Ser 440 | Trp | Leu | Ser | Leu | Phe 445 | Thr | Val | Met |
| Ala | Tyr 450 | Lys | Leu | Thr | Trp | Val 455 | Lys | Met | Gly | His | Ser 460 | Leu | Val | Gly | Gly |
| Ile 465 | Val | Gln | Glu | Arg | Ile 470 | Val | Ser | Gly | Glu | Lys 475 | Gln | His | Leu | Ser | Leu 480 |
| Val | Asn | Leu | Glu | Pro 485 | Arg | Ser | Thr | Tyr | Arg 490 | Ile | Cys | Leu | Val | Pro 495 | Leu |
| Asp | Ala | Phe | Asn 500 | Tyr | Arg | Ala | Val | Glu 505 | Asp | Thr | Ile | Cys | Ser 510 | Glu | Ala |
| Thr | Thr | His 515 | Ala | Ser | Tyr | Leu | Asn 520 | Asn | Gly | Ser | Asn | Thr 525 | Ala | Ser | Ser |
| His | Glu 530 | Gln | Thr | Thr | Ser | His 535 | Ser | Met | Gly | Ser | Pro 540 | Phe | Leu | Leu | Ala |
| Gly 545 | Leu | Ile | Gly | Gly | Ala 550 | Val | Ile | Phe | Val | Leu 555 | Val | Val | Leu | Leu | Ser 560 |
| Val | Phe | Cys | Trp | His 565 | Met | His | Lys | Lys | Gly 570 | Arg | Tyr | Thr | Ser | Gln 575 | Lys |
| Trp | Lys | Tyr | Asn 580 | Arg | Gly | Arg | Arg | Lys 585 | Asp | Asp | Tyr | Cys | Glu 590 | Ala | Gly |
| Thr | Lys | Lys 595 | Asp | Asn | Ser | Ile | Leu 600 | Glu | Met | Thr | Glu | Thr 605 | Ser | Phe | Gln |
| Ile | Val 610 | Ser | Leu | Asn | Asn | Asp 615 | Gln | Leu | Leu | Lys | Gly 620 | Asp | Phe | Arg | Leu |
| Gln 625 | Pro | Ile | Tyr | Thr | Pro 630 | Asn | Gly | Gly | Ile | Asn 635 | Tyr | Thr | Asp | Cys | His 640 |
| Ile | Pro | Asn | Asn | Met 645 | Arg | Tyr | Cys | Asn | Ser 650 | Ser | Val | Pro | Asp | Leu 655 | Glu |
| His | Cys | His | Thr 660 | | | | | | | | | | | | |
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| <211 | | | | | | | | | | | | | | | |
| <212 | > DN | A | | | | | | | | | | | | | |

| <213> Artificial Sequence | |
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| <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide probe | |
| <400> 29 cggtctacct gtatggcaac c | 21 |
| <210> 30 <211> 22 <212> DNA <213> Artificial Sequence | |
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| <400> 30 gcaggacaac cagataaacc ac | 22 |
| <210> 31 <211> 22 <212> DNA <213> Artificial Sequence | |
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| <400> 31 acgcagattt gagaaggctg tc | 22 |
| <210> 32 <211> 46 <212> DNA <213> Artificial Sequence | |
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| <400> 32 ttcacgggct gctcttgccc agctcttgaa gcttgaagag ctgcac | 46 |
| <210> 33 <211> 3449 <212> DNA <213> Homo sapiens | |
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<212> PRT

<213> Homo sapiens

<400> 34

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Ser Ser Cys Glu Asn Lys Arg Ala Asp Leu Val Phe Ile Ile Asp Ser 50 55 60

Ser Arg Ser Val Asn Thr His Asp Tyr Ala Lys Val Lys Glu Phe Ile 65 70 75 80

Val Asp Ile Leu Gln Phe Leu Asp Ile Gly Pro Asp Val Thr Arg Val 85 90 95

Gly Leu Leu Gln Tyr Gly Ser Thr Val Lys Asn Glu Phe Ser Leu Lys 100 105 110

Thr Phe Lys Arg Lys Ser Glu Val Glu Arg Ala Val Lys Arg Met Arg 115 120 125

His Leu Ser Thr Gly Thr Met Thr Gly Leu Ala Ile Gln Tyr Ala Leu 130 135 140

Asn Ile Ala Phe Ser Glu Ala Glu Gly Ala Arg Pro Leu Arg Glu Asn 145 150 155 160

Val Pro Arg Val Ile Met Ile Val Thr Asp Gly Arg Pro Gln Asp Ser 165 170 175

Val Ala Glu Val Ala Ala Lys Ala Arg Asp Thr Gly Ile Leu Ile Phe 180 185 190

Ala Ile Gly Val Gly Gln Val Asp Phe Asn Thr Leu Lys Ser Ile Gly
195 200 205

Ser Glu Pro His Glu Asp His Val Phe Leu Val Ala Asn Phe Ser Gln 210 215 220

Ile Glu Thr Leu Thr Ser Val Phe Gln Lys Lys Leu Cys Thr Ala His

| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
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| Pro | Gly | Ser | Tyr 260 | Val | Cys | Arg | Cys | Lys 265 | Gln | Gly | Tyr | Ile | Leu 270 | Asn | Ser |
| Asp | Gln | Thr 275 | Thr | Cys | Arg | Ile | Gln 280 | Asp | Leu | Cys | Ala | Met 285 | Glu | Asp | His |
| Asn | Cys 290 | Glu | Gln | Leu | Cys | Val 295 | Asn | Val | Pro | Gly | Ser 300 | Phe | Val | Cys | Gln |
| Cys 305 | Tyr | Ser | Gly | Tyr | Ala 310 | Leu | Ala | Glu | Asp | Gly 315 | Lys | Arg | Cys | Val | Ala 320 |
| Val | Asp | Tyr | Cys | Ala 325 | Ser | Glu | Asn | His | Gly 330 | Cys | Glu | His | Glu | Cys 335 | Val |
| Asn | Ala | Asp | Gly 340 | Ser | Tyr | Leu | Cys | Gln 345 | Cys | His | Glu | Gly | Phe 350 | Ala | Leu |
| Asn | Pro | Asp 355 | Glu | Lys | Thr | Cys | Thr 360 | Arg | Ile | Asn | Tyr | Cys 365 | Ala | Leu | Asn |
| Lys | Pro 370 | Gly | Cys | Glu | His | Glu 375 | Cys | Val | Asn | Met | Glu 380 | Glu | Ser | Tyr | Tyr |
| Cys 385 | Arg | Cys | His | Arg | Gly 390 | Tyr | Thr | Leu | Asp | Pro 395 | Asn | Gly | Lys | Thr | Cys 400 |
| Ser | Arg | Val | Asp | His 405 | Cys | Ala | Gln | Gln | Asp 410 | His | Gly | Cys | Glu | Gln 415 | Leu |
| Cys | Leu | Asn | Thr 420 | Glu | Asp | Ser | Phe | Val 425 | Cys | Gln | Cys | Ser | Glu 430 | Gly | Phe |
| Leu | Ile | Asn 435 | Glu | Asp | Leu | Lys | Thr 440 | Cys | Ser | Arg | Val | Asp 445 | Tyr | Cys | Leu |
| Leu | Ser 450 | Asp | His | Gly | Cys | Glu 455 | Tyr | Ser | Cys | Val | Asn 460 | Met | Asp | Arg | Ser |
| Phe 465 | Ala | Cys | Gln | Cys | Pro 470 | Glu | Gly | His | Val | Leu 475 | Arg | Ser | Asp | Gly | Lys 480 |
| Thr | Cys | Ala | Lys | Leu 485 | Asp | Ser | Cys | Ala | Leu 490 | Gly | Asp | His | Gly | Cys 495 | Glu |
| His | Ser | Cys | Val 500 | Ser | Ser | Glu | Asp | Ser 505 | Phe | Val | Cys | Gln | Cys 510 | Phe | Glu |

- Gly Tyr Ile Leu Arg Glu Asp Gly Lys Thr Cys Arg Arg Lys Asp Val 515 520 525
- Cys Gln Ala Ile Asp His Gly Cys Glu His Ile Cys Val Asn Ser Asp 530 535 540
- Asp Ser Tyr Thr Cys Glu Cys Leu Glu Gly Phe Arg Leu Ala Glu Asp 545 550 555 560
- Gly Lys Arg Cys Arg Lys Asp Val Cys Lys Ser Thr His His Gly
 565 570 575
- Cys Glu His Ile Cys Val Asn Asn Gly Asn Ser Tyr Ile Cys Lys Cys 580 585 590
- Ser Glu Gly Phe Val Leu Ala Glu Asp Gly Arg Arg Cys Lys Lys Cys 595 600 605
- Thr Glu Gly Pro Ile Asp Leu Val Phe Val Ile Asp Gly Ser Lys Ser 610 620
- Leu Gly Glu Glu Asn Phe Glu Val Val Lys Gln Phe Val Thr Gly Ile 625 630 635 640
- Ile Asp Ser Leu Thr Ile Ser Pro Lys Ala Ala Arg Val Gly Leu Leu 645 650 655
- Gln Tyr Ser Thr Gln Val His Thr Glu Phe Thr Leu Arg Asn Phe Asn 660 665 670
- Ser Ala Lys Asp Met Lys Lys Ala Val Ala His Met Lys Tyr Met Gly 675 680 685
- Lys Gly Ser Met Thr Gly Leu Ala Leu Lys His Met Phe Glu Arg Ser 690 695 700
- Phe Thr Gln Gly Glu Gly Ala Arg Pro Leu Ser Thr Arg Val Pro Arg 705 710 715 720
- Ala Ala Ile Val Phe Thr Asp Gly Arg Ala Gln Asp Asp Val Ser Glu 725 730 735
- Trp Ala Ser Lys Ala Lys Ala Asn Gly Ile Thr Met Tyr Ala Val Gly
 740 745 750
- Val Gly Lys Ala Ile Glu Glu Leu Gln Glu Ile Ala Ser Glu Pro 755 760 765
- Thr Asn Lys His Leu Phe Tyr Ala Glu Asp Phe Ser Thr Met Asp Glu
 770 780
- Ile Ser Glu Lys Leu Lys Lys Gly Ile Cys Glu Ala Leu Glu Asp Ser 785 790 795 800

| Asp | Gly | Arg | Gln | Asp 805 | Ser | Pro | Ala | Gly | Glu 810 | Leu | Pro | Lys | Thr | Val 815 | Gln | |
|--------------|----------------------------------|-----------------|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|----|
| Gln | Pro | Thr | Glu 820 | Ser | Glu | Pro | Val | Thr 825 | Ile | Asn | Ile | Gln | Asp 830 | Leu | Leu | |
| Ser | Cys | Ser 835 | Asn | Phe | Ala | Val | Gln 840 | His | Arg | Tyr | Leu | Phe 845 | Glu | Glu | Asp | |
| Asn | Leu 850 | Leu | Arg | Ser | Thr | Gln 855 | Lys | Leu | Ser | His | Ser 860 | Thr | Lys | Pro | Ser | |
| Gly 865 | Ser | Pro | Leu | Glu | Glu 870 | Lys | His | Asp | Gln | Cys 875 | Lys | Cys | Glu | Asn | Leu 880 | |
| Ile | Met | Phe | Gln | Asn 885 | Leu | Ala | Asn | Glu | Glu 890 | Val | Arg | Lys | Leu | Thr 895 | Gln | |
| Arg | Leu | Glu | Glu 900 | Met | Thr | Gln | Arg | Met 905 | Glu | Ala | Leu | Glu | Asn 910 | Arg | Leu | |
| Arg | Tyr | Arg 915 | | | | | | | | | | | | | | |
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| | 0> 3) gedai | | tcta [.] | tage | tt g | a | | | | | | | | | | 22 |
| _ | | | | 5 | .ن - | _ | | | | | | | | | | |
| | 0 > 3' 1 > 4! | | | | | | | | | | | | | | | |
| | 2> DI | | | | | | | | | | | | | | | |
| | | | icia | l Se | quen | ce | | | | | | | | | | |

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aaaaggagga tcaggtgttg tcctacatca atggggtcac aacaagcaaa cctggagtat 420
cettaqteta etceatqeee teeeggaace tgteeetgeg getggagggt etceaggaga 480
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teeggeeace ceatggeet eccaggeetg gtgeattgae ecceaegeee agteteteea 1140
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|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Phe | Leu | Gly | Leu 20 | Ser | Ala | Leu | Ala | Pro 25 | Pro | Ser | Arg | Ala | Gln 30 | Leu | Gln |
| Leu | His | Leu 35 | Pro | Ala | Asn | Arg | Leu 40 | Gln | Ala | Val | Glu | Gly 45 | Gly | Glu | Val |
| Val | Leu 50 | Pro | Ala | Trp | Tyr | Thr 55 | Leu | His | Gly | Glu | Val 60 | Ser | Ser | Ser | Gln |
| Pro 65 | Trp | Glu | Val | Pro | Phe 70 | Val | Met | Trp | Phe | Phe 75 | Lys | Gln | Lys | Glu | Lys 80 |
| Glu | Asp | Gln | Val | Leu 85 | Ser | Tyr | Ile | Asn | Gly 90 | Val | Thr | Thr | Ser | Lys 95 | Pro |
| Gly | Val | Ser | Leu 100 | Val | Tyr | Ser | Met | Pro 105 | Ser | Arg | Asn | Leu | Ser 110 | Leu | Arg |
| Leu | Glu | Gly 115 | Leu | Gln | Glu | Lys | Asp 120 | Ser | Gly | Pro | Tyr | Ser 125 | Cys | Ser | Val |
| Asn | Val 130 | Gln | Asp | Lys | Gln | Gly 135 | Lys | Ser | Arg | Gly | His 140 | Ser | Ile | Lys | Thr |
| Leu 145 | Glu | Leu | Asn | Val | Leu 150 | Val | Pro | Pro | Ala | Pro 155 | Pro | Ser | Cys | Arg | Leu 160 |
| Gln | Gly | Val | Pro | His 165 | Val | Gly | Ala | Asn | Val 170 | Thr | Leu | Ser | Cys | Gln 175 | Ser |
| Pro | Arg | Ser | Lys 180 | Pro | Ala | Val | Gln | Tyr 185 | Gln | Trp | Asp | Arg | Gln 190 | Leu | Pro |
| Ser | Phe | Gln 195 | Thr | Phe | Phe | Ala | Pro 200 | Ala | Leu | Asp | Val | Ile 205 | Arg | Gly | Ser |
| Leu | Ser 210 | Leu | Thr | Asn | Leu | Ser 215 | Ser | Ser | Met | Ala | Gly 220 | Val | Tyr | Val | Cys |
| Lys 225 | Ala | His | Asn | Glu | Val 230 | Gly | Thr | Ala | Gln | Cys 235 | Asn | Val | Thr | Leu | Glu 240 |
| Val | Ser | Thr | Gly | Pro 245 | Gly | Ala | Ala | Val | Val 250 | Ala | Gly | Ala | Val | Val 255 | Gly |
| Thr | Leu | Val | Gly 260 | Leu | Gly | Leu | Leu | Ala 265 | Gly | Leu | Val | Leu | Leu 270 | Tyr | His |
| Arg | Arg | Gly 275 | Lys | Ala | Leu | Glu | Glu 280 | Pro | Ala | Asn | Asp | Ile 285 | Lys | Glu | Asp |

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Ala Ile Ala Pro Arg Thr Leu Pro Trp Pro Lys Ser Ser Asp Thr Ile
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Ser Lys Asn Gly Thr Leu Ser Ser Val Thr Ser Ala Arg Ala Leu Arg
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Pro Pro His Gly Pro Pro Arg Pro Gly Ala Leu Thr Pro Thr Pro Ser
                                     330
Leu Ser Ser Gln Ala Leu Pro Ser Pro Arg Leu Pro Thr Thr Asp Gly
                                                     350
            340
                                 345
Ala His Pro Gln Pro Ile Ser Pro Ile Pro Gly Gly Val Ser Ser Ser
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Gly Leu Ser Arg Met Gly Ala Val Pro Val Met Val Pro Ala Gln Ser
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Gln Ala Gly Ser Leu Val
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<210> 42
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| <400> 44 gaccggcagg cttctgcg | 18 |
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| <210> 46 <211> 24 <212> DNA <213> Artificial Sequence | |
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| <210> 47 | |

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gtgaaatacg caatggaatt gaagcctgct attgcaacat gggattttca ggaaatggtg 180
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caaactgcca tttagataat gtctgtatag ctgcaaatat taataaaact ttaacaaaaa 420
tcagatccat aaaagaacct gtggctttgc tacaagaagt ctatagaaat tctgtgacag 480
atctttcacc aacagatata attacatata tagaaatatt agctgaatca tcttcattac 540
taggttacaa gaacaacact atctcagcca aggacaccct ttctaactca actcttactg 600
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2822

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Ser Gly Asn Gly Val Thr Ile Cys Glu Asp Asp Asn Glu Cys Gly Asn
                        55
Leu Thr Gln Ser Cys Gly Glu Asn Ala Asn Cys Thr Asn Thr Glu Gly
 65
                    70
Ser Tyr Tyr Cys Met Cys Val Pro Gly Phe Arg Ser Ser Ser Asn Gln
Asp Arg Phe Ile Thr Asn Asp Gly Thr Val Cys Ile Glu Asn Val Asn
                                                  110
           100
Ala Asn Cys His Leu Asp Asn Val Cys Ile Ala Ala Asn Ile Asn Lys
        115
                           120
Thr Leu Thr Lys Ile Arg Ser Ile Lys Glu Pro Val Ala Leu Leu Gln
                       135
                                           140
Glu Val Tyr Arg Asn Ser Val Thr Asp Leu Ser Pro Thr Asp Ile Ile
                   150
                                       155
                                                          160
145
Thr Tyr Ile Glu Ile Leu Ala Glu Ser Ser Leu Leu Gly Tyr Lys
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Asn Asn Thr Ile Ser Ala Lys Asp Thr Leu Ser Asn Ser Thr Leu Thr

| | | | 180 | | | | | 185 | | | | | 190 | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Glu | Phe | Val 195 | Lys | Thr | Val | Asn | Asn 200 | Phe | Val | Gln | Arg | Asp 205 | Thr | Phe | Val |
| Val | Trp 210 | Asp | Lys | Leu | Ser | Val 215 | Asn | His | Arg | Arg | Thr 220 | His | Leu | Thr | Lys |
| Leu 225 | Met | His | Thr | Val | Glu 230 | Gln | Ala | Thr | Leu | Arg 235 | Ile | Ser | Gln | Ser | Phe 240 |
| Gln | Lys | Thr | Thr | Glu 245 | Phe | Asp | Thr | Asn | Ser 250 | Thr | Asp | Ile | Ala | Leu 255 | Lys |
| Val | Phe | Phe | Phe 260 | Asp | Ser | Tyr | Asn | Met 265 | Lys | His | Ile | His | Pro 270 | His | Met |
| Asn | Met | Asp 275 | Gly | Asp | Tyr | Ile | Asn 280 | Ile | Phe | Pro | Lys | Arg 285 | Lys | Ala | Ala |
| Tyr | Asp 290 | Ser | Asn | Gly | Asn | Val 295 | Ala | Val | Ala | Phe | Leu 300 | Tyr | Tyr | Lys | Ser |
| Ile 305 | Gly | Pro | Leu | Leu | Ser 310 | Ser | Ser | Asp | Asn | Phe 315 | Leu | Leu | Lys | Pro | Gln 320 |
| Asn | Tyr | Asp | Asn | Ser 325 | Glu | Glu | Glu | Glu | Arg 330 | Val | Ile | Ser | Ser | Val 335 | Ile |
| Ser | Val | Ser | Met 340 | Ser | Ser | Asn | Pro | Pro 345 | Thr | Leu | Tyr | Glu | Leu 350 | Glu | Lys |
| Ile | Thr | Phe 355 | Thr | Leu | Ser | His | Arg 360 | Lys | Val | Thr | Asp | Arg 365 | Tyr | Arg | Ser |
| Leu | Cys 370 | Ala | Phe | Trp | Asn | Tyr 375 | Ser | Pro | Asp | Thr | Met 380 | Asn | Gly | Ser | Trp |
| Ser 385 | Ser | Glu | Gly | Cys | Glu 390 | Leu | Thr | Tyr | | Asn 395 | | Thr | His | Thr | Ser 400 |
| Cys | Arg | Cys | Asn | His 405 | Leu | Thr | His | Phe | Ala 410 | Ile | Leu | Met | Ser | Ser 415 | Gly |
| Pro | Ser | Ile | Gly 420 | Ile | Lys | Asp | Tyr | Asn 425 | | Leu | Thr | Arg | Ile 430 | | Glr |
| Leu | Gly | Ile 435 | Ile | Ile | Ser | Leu | Ile 440 | Cys | Leu | Ala | Ile | Cys 445 | | Phe | Thi |
| Phe | Trp 450 | Phe | Phe | Ser | Glu | Ile 455 | Gln | Ser | Thr | Arg | Thr 460 | | Ile | His | Lys |

Asn Leu Cys Cys Ser Leu Phe Leu Ala Glu Leu Val Phe Leu Val Gly 465 470 480

Ile Asn Thr Asn Thr Asn Lys Leu Phe Cys Ser Ile Ile Ala Gly Leu
485 490 495

Leu His Tyr Phe Phe Leu Ala Ala Phe Ala Trp Met Cys Ile Glu Gly 500 505 510

Ile His Leu Tyr Leu Ile Val Val Gly Val Ile Tyr Asn Lys Gly Phe 515 520 525

Leu His Lys Asn Phe Tyr Ile Phe Gly Tyr Leu Ser Pro Ala Val Val 530 535 540

Val Gly Phe Ser Ala Ala Leu Gly Tyr Arg Tyr Tyr Gly Thr Thr Lys 545 550 555 560

Val Cys Trp Leu Ser Thr Glu Asn Asn Phe Ile Trp Ser Phe Ile Gly 565 570 575

Pro Ala Cys Leu Ile Ile Leu Val Asn Leu Leu Ala Phe Gly Val Ile 580 585 590

Ile Tyr Lys Val Phe Arg His Thr Ala Gly Leu Lys Pro Glu Val Ser 595 600 605

Cys Phe Glu Asn Ile Arg Ser Cys Ala Arg Gly Ala Leu Ala Leu Leu 610 615 620

Phe Leu Leu Gly Thr Thr Trp Ile Phe Gly Val Leu His Val Val His 625 630 635 640

Ala Ser Val Val Thr Ala Tyr Leu Phe Thr Val Ser Asn Ala Phe Gln 645 650 655

Gly Met Phe Ile Phe Leu Phe Leu Cys Val Leu Ser Arg Lys Ile Gln 660 665 670

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Leu Arg 690

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<220>

<221> modified base

<222> (61)

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gtattggtcc ctttgctttc atcatctgac aacttcttat tgaaacctca aaattatgat 180
aattetgaag aggaggaaag agteatatet teagtaattt eagteteaat gageteaaac 240
ccacccacat tatatgaact tgaaaaaata acatttacat taagtcatcg aaaggtcaca 300
gataggtata ggagtctatg tggcattttg gaatactcac ctgataccat gaatggcagc 360
tggtcttcag agggctgtga gctgacatac tcaaatgaga cccacacctc atgccgctgt 420
aatcacctga cacattttgc aattttgatg tcctctggtc cttccattgg tattaaagat 480
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Thr Ser Gly Pro His Gly Leu Ser Ser Cys Phe Leu Arg Ile Arg Ala 50 55 60

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| Leu | Gln | Tyr 115 | Ser | Glu | Glu | Asp | Cys 120 | Ala | Phe | Glu | Glu | Glu 125 | Ile | Arg | Pro | |
| Asp | Gly 130 | Tyr | Asn | Val | Tyr | Arg 135 | Ser | Glu | Lys | His | Arg 140 | Leu | Pro | Val | Ser | |
| Leu 145 | Ser | Ser | Ala | Lys | Gln 150 | Arg | Gln | Leu | Tyr | Lys 155 | Asn | Arg | Gly | Phe | Leu 160 | |
| Pro | Leu | Ser | His | Phe 165 | Leu | Pro | Met | Leu | Pro 170 | Met | Val | Pro | Glu | Glu 175 | Pro | |
| Glu | Asp | Leu | Arg 180 | Gly | His | Leu | Glu | Ser 185 | Asp | Met | Phe | Ser | Ser 190 | Pro | Leu | |
| Glu | Thr | Asp 195 | Ser | Met | Asp | Pro | Phe 200 | Gly | Leu | Val | Thr | Gly 205 | Leu | Glu | Ala | |
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| <22 | | | | on o eoti | | | | Seq | uenc | e: S | ynth | etic | | | | |
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| <21 <21 | 0> 6 1> 4 2> D 3> A | 2 NA | icia | l Se | quen | ce | | | | | | | | | | |
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- Lys Leu Gly Arg Ser Val Ser Phe Val Tyr Tyr Gln Gln Thr Leu Gln 65 70 75 80
- Gly Asp Phe Lys Asn Arg Ala Glu Met Ile Asp Phe Asn Ile Arg Ile
 85 90 95
- Lys Asn Val Thr Arg Ser Asp Ala Gly Lys Tyr Arg Cys Glu Val Ser
- Ala Pro Ser Glu Gln Gly Gln Asn Leu Glu Glu Asp Thr Val Thr Leu 115 120 125
- Glu Val Leu Val Ala Pro Ala Val Pro Ser Cys Glu Val Pro Ser Ser 130 135 140
- Ala Leu Ser Gly Thr Val Val Glu Leu Arg Cys Gln Asp Lys Glu Gly 145 150 155 160
- Asn Pro Ala Pro Glu Tyr Thr Trp Phe Lys Asp Gly Ile Arg Leu Leu 165 170 175
- Glu Asn Pro Arg Leu Gly Ser Gln Ser Thr Asn Ser Ser Tyr Thr Met 180 185 190
- Asn Thr Lys Thr Gly Thr Leu Gln Phe Asn Thr Val Ser Lys Leu Asp
- Thr Gly Glu Tyr Ser Cys Glu Ala Arg Asn Ser Val Gly Tyr Arg Arg 210 215 220
- Cys Pro Gly Lys Arg Met Gln Val Asp Asp Leu Asn Ile Ser Gly Ile 225 230 235 240
- Ile Ala Ala Val Val Val Ala Leu Val Ile Ser Val Cys Gly Leu 245 250 255
- Gly Val Cys Tyr Ala Gln Arg Lys Gly Tyr Phe Ser Lys Glu Thr Ser 260 265 270
- Phe Gln Lys Ser Asn Ser Ser Ser Lys Ala Thr Thr Met Ser Glu Asn 275 280 285
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55

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- Lys Lys Met Pro Gln Leu Leu Ser Val Tyr Leu Glu Glu Asn Lys Leu 115 120 125
- Thr Glu Leu Pro Glu Lys Cys Leu Ser Glu Leu Ser Asn Leu Gln Glu 130 135 140
- Leu Tyr Ile Asn His Asn Leu Leu Ser Thr Ile Ser Pro Gly Ala Phe 145 150 155 160
- Ile Gly Leu His Asn Leu Leu Arg Leu His Leu Asn Ser Asn Arg Leu 165 170 175
- Gln Met Ile Asn Ser Lys Trp Phe Asp Ala Leu Pro Asn Leu Glu Ile 180 185 190
- Leu Met Ile Gly Glu Asn Pro Ile Ile Arg Ile Lys Asp Met Asn Phe 195 200 205
- Lys Pro Leu Ile Asn Leu Arg Ser Leu Val Ile Ala Gly Ile Asn Leu 210 215 220
- Thr Glu Ile Pro Asp Asn Ala Leu Val Gly Leu Glu Asn Leu Glu Ser 225 230 235 240
- Ile Ser Phe Tyr Asp Asn Arg Leu Ile Lys Val Pro His Val Ala Leu 245 250 255
- Gln Lys Val Val Asn Leu Lys Phe Leu Asp Leu Asn Lys Asn Pro Ile 260 265 270
- Asn Arg Ile Arg Arg Gly Asp Phe Ser Asn Met Leu His Leu Lys Glu 275 280 285
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- Val Asp Asn Leu Pro Asp Leu Arg Lys Ile Glu Ala Thr Asn Asn Pro 305 310 315 320
- Arg Leu Ser Tyr Ile His Pro Asn Ala Phe Phe Arg Leu Pro Lys Leu 325 330 335
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| Pro | Ile 370 | Arg | Cys | Asp | Cys | Val 375 | Ile | Arg | Trp | Met | Asn 380 | Met | Asn | Lys | Thr |
| Asn 385 | Ile | Arg | Phe | Met | Glu 390 | Pro | Asp | Ser | Leu | Phe 395 | Cys | Val | Asp | Pro | Pro 400 |
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| Glu | Ile | Cys | Leu 420 | Pro | Leu | Ile | Ala | Pro 425 | Glu | Ser | Phe | Pro | Ser 430 | Asn | Leu |
| Asn | Val | Glu 435 | Ala | Gly | Ser | Tyr | Val 440 | Ser | Phe | His | Cys | Arg 445 | Ala | Thr | Ala |
| Glu | Pro 450 | Gln | Pro | Glu | Ile | Tyr 455 | Trp | Ile | Thr | Pro | Ser 460 | Gly | Gln | Lys | Leu |
| Leu 465 | Pro | Asn | Thr | Leu | Thr 470 | Asp | Lys | Phe | Tyr | Val 475 | His | Ser | Glu | Gly | Thr 480 |
| Leu | Asp | Ile | Asn | Gly 485 | Val | Thr | Pro | Lys | Glu 490 | Gly | Gly | Leu | Tyr | Thr 495 | Cys |
| Ile | Ala | Thr | Asn 500 | Leu | Val | Gly | Ala | Asp 505 | Leu | Lys | Ser | Val | Met 510 | Ile | Lys |
| Val | Asp | Gly 515 | Ser | Phe | Pro | Gln | Asp 520 | Asn | Asn | Gly | Ser | Leu 525 | Asn | Ile | Lys |
| Ile | Arg 530 | Asp | Ile | Gln | Ala | Asn 535 | Ser | Val | Leu | Val | Ser 540 | Trp | Lys | Ala | Ser |
| Ser 545 | Lys | Ile | Leu | Lys | Ser 550 | Ser | Val | Lys | Trp | Thr 555 | Ala | Phe | Val | Lys | Thr 560 |
| Glu | Asn | Ser | His | Ala 565 | Ala | Gln | Ser | Ala | Arg 570 | Ile | Pro | Ser | Asp | Val 575 | Lys |
| Val | Tyr | Asn | Leu 580 | Thr | His | Leu | Asn | Pro 585 | Ser | Thr | Glu | Tyr | Lys 590 | Ile | Cys |
| Ile | Asp | Ile 595 | Pro | Thr | Ile | Tyr | Gln 600 | Lys | Asn | Arg | Lys | Lys 605 | | Val | Asn |
| Val | Thr | Thr | Lys | Gly | Leu | His | | Asp | Gln | Lys | Glu 620 | | Glu | Lys | Asn |

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Leu Gly Glu Leu Tyr Pro Pro Leu Ile Asn Leu Trp Glu Ala Gly Lys
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n Val\$35\$ 40 45

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Glu Thr Val Leu Leu Tyr Leu Asp Ser Asn Gln Ile Thr Ser Ile Pro 65 70 75 80

Asn Glu Ile Phe Lys Asp Leu His Gln Leu Arg Val Leu Asn Leu Ser 85 90 95

Lys Asn Gly Ile Glu Phe Ile Asp Glu His Ala Phe Lys Gly Val Ala 100 105 110

Glu Thr Leu Gln Thr Leu Asp Leu Ser Asp Asn Arg Ile Gln Ser Val 115 120 125

His Lys Asn Ala Phe Asn Asn Leu Lys Ala Arg Ala Arg Ile Ala Asn 130 135 140

Asn Pro Trp His Cys Asp Cys Thr Leu Gln Gln Val Leu Arg Ser Met 145 150 155 160

Ala Ser Asn His Glu Thr Ala His Asn Val Ile Cys Lys Thr Ser Val 165 170 175

Leu Asp Glu His Ala Gly Arg Pro Phe Leu Asn Ala Ala Asn Asp Ala 180 185 190

Asp Leu Cys Asn Leu Pro Lys Lys Thr Thr Asp Tyr Ala Met Leu Val 195 200 205

Thr Met Phe Gly Trp Phe Thr Met Val Ile Ser Tyr Val Val Tyr Tyr 210 215 220

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oligonucleotide probe

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- Pro Gly Pro Gly Gly Gly Ser Lys Asp Leu Leu Phe Trp Val Ala Leu 85 90 95
- Glu Arg Arg Ser His Cys Thr Leu Glu Asn Glu Pro Leu Arg Gly
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- Phe Ser Trp Leu Ser Ser Asp Pro Gly Gly Leu Glu Ser Asp Thr Leu 115 120 125
- Gln Trp Val Glu Glu Pro Gln Arg Ser Cys Thr Ala Arg Arg Cys Ala 130 135 140
- Val Leu Gln Ala Thr Gly Gly Val Glu Pro Ala Gly Trp Lys Glu Met 145 150 155 160
- Arg Cys His Leu Arg Ala Asn Gly Tyr Leu Cys Lys Tyr Gln Phe Glu 165 170 175
- Val Leu Cys Pro Ala Pro Arg Pro Gly Ala Ala Ser Asn Leu Ser Tyr 180 185 190
- Arg Ala Pro Phe Gln Leu His Ser Ala Ala Leu Asp Phe Ser Pro Pro 195 200 205
- Gly Thr Glu Val Ser Ala Leu Cys Arg Gly Gln Leu Pro Ile Ser Val 210 215 220
- Thr Cys Ile Ala Asp Glu Ile Gly Ala Arg Trp Asp Lys Leu Ser Gly 225 230 235 240
- Asp Val Leu Cys Pro Cys Pro Gly Arg Tyr Leu Arg Ala Gly Lys Cys 245 250 255
- Ala Glu Leu Pro Asn Cys Leu Asp Asp Leu Gly Gly Phe Ala Cys Glu 260 265 270
- Cys Ala Thr Gly Phe Glu Leu Gly Lys Asp Gly Arg Ser Cys Val Thr 275 280 285
- Ser Gly Glu Gly Gln Pro Thr Leu Gly Gly Thr Gly Val Pro Thr Arg 290 295 300
- Arg Pro Pro Ala Thr Ala Thr Ser Pro Val Pro Gln Arg Thr Trp Pro 305 310 315 320
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| Ile Phe | Val | Ser | Thr 405 | Ala | Val | Val | Val | Leu 410 | Val | Ile | Leu | Thr | Met 415 | Thr | |
| Val Leu | | Leu 420 | Val | Lys | Leu | Cys | Phe 425 | His | Glu | Ser | Pro | Ser 430 | Ser | Gln | |
| Pro Arg | Lys 435 | Glu | Ser | Met | Gly | Pro 440 | Pro | Gly | Leu | Glu | Ser 445 | Asp | Pro | Glu | |
| Pro Ala 450 | Ala | Leu | Gly | Ser | Ser 455 | Ser | Ala | His | Cys | Thr 460 | Asn | .Asn | Gly | Val | |
| Lys Val 465 | Gly | Asp | Cys | Asp 470 | Leu | Arg | Asp | Arg | Ala 475 | Glu | Gly | Ala | Leu | Leu 480 | |
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Phe Pro Gly Val Tyr Pro Pro Asn Ser Lys Cys Thr Trp Lys Ile Thr
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- Glu Ser Asp Asn Leu Cys Arg Tyr Asp Phe Val Asp Val Tyr Asn Gly
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- His Ala Asn Gly Gln Arg Ile Gly Arg Phe Cys Gly Thr Phe Arg Pro
- Gly Ala Leu Val Ser Ser Gly Asn Lys Met Met Val Gln Met Ile Ser 115 120 125
- Asp Ala Asn Thr Ala Gly Asn Gly Phe Met Ala Met Phe Ser Ala Ala 130 135 140
- Glu Pro Asn Glu Arg Gly Asp Gln Tyr Cys Gly Gly Leu Leu Asp Arg 145 150 155 160
- Pro Ser Gly Ser Phe Lys Thr Pro Asn Trp Pro Asp Arg Asp Tyr Pro 165 170 175
- Ala Gly Val Thr Cys Val Trp His Ile Val Ala Pro Lys Asn Gln Leu 180 185 190
- Ile Glu Leu Lys Phe Glu Lys Phe Asp Val Glu Arg Asp Asn Tyr Cys
 195 200 205
- Arg Tyr Asp Tyr Val Ala Val Phe Asn Gly Gly Glu Val Asn Asp Ala 210 215 220
- Arg Arg Ile Gly Lys Tyr Cys Gly Asp Ser Pro Pro Ala Pro Ile Val 225 230 235 240
- Ser Glu Arg Asn Glu Leu Leu Ile Gln Phe Leu Ser Asp Leu Ser Leu 245 250 255
- Thr Ala Asp Gly Phe Ile Gly His Tyr Ile Phe Arg Pro Lys Lys Leu 260 265 270
- Pro Thr Thr Glu Gln Pro Val Thr Thr Thr Phe Pro Val Thr Thr 275 280 285
- Gly Leu Lys Pro Thr Val Ala Leu Cys Gln Gln Lys Cys Arg Arg Thr 290 295 300
- Gly Thr Leu Glu Gly Asn Tyr Cys Ser Ser Asp Phe Val Leu Ala Gly 305 310 315 320
- Thr Val Ile Thr Thr Ile Thr Arg Asp Gly Ser Leu His Ala Thr Val
- Ser Ile Ile Asn Ile Tyr Lys Glu Gly Asn Leu Ala Ile Gln Gln Ala

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| Leu | Leu 370 | Arg | Arg | Gly | Leu | Asn 375 | Tyr | Ile | Ile | Met | Gly 380 | Gln | Val | Gly | Glu | |
| Asp 385 | Gly | Arg | Gly | Lys | Ile 390 | Met | Pro | Asn | Ser | Phe 395 | Ile | Met | Met | Phe | Lys 400 | |
| Thr | Lys | Asn | Gln | Lys 405 | Leu | Leu | Asp | Ala | Leu 410 | Lys | Asn | Lys | Gln | Cys 415 | | |
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| | 0> 1 aagg | | cctc | caca | at a | C | | | | | | | | | | 22 |
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<213> Homo sapiens

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Cys Arg Gly Leu Val Asp Ser Phe Asn Lys Gly Leu Glu Arg Thr Ile 50 55 60 Arg Asp Asn Phe Gly Gly Gly Asn Thr Ala Trp Glu Glu Glu Asn Leu 65 70 75 80

Ser Lys Tyr Lys Asp Ser Glu Thr Arg Leu Val Glu Val Leu Glu Gly 85 90 95

Val Cys Ser Lys Ser Asp Phe Glu Cys His Arg Leu Leu Glu Leu Ser 100 105 110

Glu Glu Leu Val Glu Ser Trp Trp Phe His Lys Gln Gln Glu Ala Pro 115 120 125

Asp Leu Phe Gln Trp Leu Cys Ser Asp Ser Leu Lys Leu Cys Cys Pro 130 135 140

Ala Gly Thr Phe Gly Pro Ser Cys Leu Pro Cys Pro Gly Gly Thr Glu 145 150 155 160

Arg Pro Cys Gly Gly Tyr Gly Gln Cys Glu Gly Glu Gly Thr Arg Gly 165 170 175

Gly Ser Gly His Cys Asp Cys Gln Ala Gly Tyr Gly Glu Ala Cys 180 185 190

Gly Gln Cys Gly Leu Gly Tyr Phe Glu Ala Glu Arg Asn Ala Ser His 195 200 205

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Cys Lys Lys Cys Ser Pro Gly Tyr Gln Gln Val Gly Ser Lys Cys Leu 290 295 300

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| Gly 385 | Asp | Leu | Val | Phe | Thr 390 | Ala | Ile | Phe | Ile | Gly 395 | Ala | Val | Ala | Ala | Met 400 | |
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| Ile | Lys | Gly | Arg 420 | | | | | | | | | | | | | |
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<212> PRT
<213> Homo sapiens
<400> 114
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Arg Gln Leu Gln Leu Lys Glu Val Pro Thr Leu Asp Arg Ala Asp Met
                             40
         35
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- Glu Glu Leu Val Ile Pro Thr His Val Arg Ala Gln Tyr Val Ala Leu 50 55 60
- Leu Gln Arg Ser His Gly Asp Arg Ser Arg Gly Lys Arg Phe Ser Gln 65 70 75 80
- Ser Phe Arg Glu Val Ala Gly Arg Phe Leu Ala Leu Glu Ala Ser Thr 85 90. 95
- His Leu Leu Val Phe Gly Met Glu Gln Arg Leu Pro Pro Asn Ser Glu 100 105 110
- Leu Val Gln Ala Val Leu Arg Leu Phe Gln Glu Pro Val Pro Lys Ala
- Ala Leu His Arg His Gly Arg Leu Ser Pro Arg Ser Ala Arg Ala Arg 130 135 140
- Val Thr Val Glu Trp Leu Arg Val Arg Asp Asp Gly Ser Asn Arg Thr 145 150 155 160
- Ser Leu Ile Asp Ser Arg Leu Val Ser Val His Glu Ser Gly Trp Lys 165 170 175
- Ala Phe Asp Val Thr Glu Ala Val Asn Phe Trp Gln Gln Leu Ser Arg 180 185 190
- Pro Arg Gln Pro Leu Leu Gln Val Ser Val Gln Arg Glu His Leu 195 200 205
- Gly Pro Leu Ala Ser Gly Ala His Lys Leu Val Arg Phe Ala Ser Gln 210 215 220
- Gly Ala Pro Ala Gly Leu Gly Glu Pro Gln Leu Glu Leu His Thr Leu 225 230 235 240
- Asp Leu Gly Asp Tyr Gly Ala Gln Gly Asp Cys Asp Pro Glu Ala Pro 245 250 255
- Met Thr Glu Gly Thr Arg Cys Cys Arg Gln Glu Met Tyr Ile Asp Leu 260 265 270
- Gln Gly Met Lys Trp Ala Glu Asn Trp Val Leu Glu Pro Pro Gly Phe 275 280 285
- Leu Ala Tyr Glu Cys Val Gly Thr Cys Arg Gln Pro Pro Glu Ala Leu 290 295 300
- Ala Phe Lys Trp Pro Phe Leu Gly Pro Arg Gln Cys Ile Ala Ser Glu 305 310 315 320
- Thr Asp Ser Leu Pro Met Ile Val Ser Ile Lys Glu Gly Gly Arg Thr 325 330 335

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<400> 115
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<400> 116
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<400> 117
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<210> 118
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<212> DNA
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gtcaagetea tegtgettgt geeteeatee aageetaeag ttaaeateee eteetetgee 480
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agcaactett cetatgteet gaateecaca acaggagage tggtetttga teecetgtea 660
gcctctgata ctggagaata cagctgtgag gcacggaatg ggtatgggac acccatgact 720
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<212> PRT
<213> Homo sapiens
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Ser Cys Ala Tyr Ser Gly Phe Ser Ser Pro Arg Val Glu Trp Lys Phe 50 55 60

Asp Gln Gly Asp Thr Thr Arg Leu Val Cys Tyr Asn Asn Lys Ile Thr 65 70 75 80

Ala Ser Tyr Glu Asp Arg Val Thr Phe Leu Pro Thr Gly Ile Thr Phe
85 90 95

Glu Glu Gly Gly Asn Ser Tyr Gly Glu Val Lys Val Lys Leu Ile Val 115 120 125

Leu Val Pro Pro Ser Lys Pro Thr Val Asn Ile Pro Ser Ser Ala Thr 130 135 140

Ile Gly Asn Arg Ala Val Leu Thr Cys Ser Glu Gln Asp Gly Ser Pro 145 150 155 160

Pro Ser Glu Tyr Thr Trp Phe Lys Asp Gly Ile Val Met Pro Thr Asn 165 170 175

Pro Lys Ser Thr Arg Ala Phe Ser Asn Ser Ser Tyr Val Leu Asn Pro 180 185 190

Thr Thr Gly Glu Leu Val Phe Asp Pro Leu Ser Ala Ser Asp Thr Gly 195 200 205

Glu Tyr Ser Cys Glu Ala Arg Asn Gly Tyr Gly Thr Pro Met Thr Ser 210 215 220

Asn Ala Val Arg Met Glu Ala Val Glu Arg Asn Val Gly Val Ile Val 225 230 235 240

Ala Ala Val Leu Val Thr Leu Ile Leu Leu Gly Ile Leu Val Phe Gly 245 250 255

Ile Trp Phe Ala Tyr Ser Arg Gly His Phe Asp Arg Thr Lys Lys Gly 260 265 270

Thr Ser Ser Lys Lys Val Ile Tyr Ser Gln Pro Ser Ala Arg Ser Glu 275 280 285

Gly Glu Phe Lys Gln Thr Ser Ser Phe Leu Val 290 295

<210> 120

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide probe

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tcgcggagct gtgttctgtt tccc

<210> 121

<211> 50

| <212> 1 <213> 2 | DNA Artificial Sequence | |
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| | Description of Artificial Sequence: Synthetic oligonucleotide probe | |
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| | Description of Artificial Sequence: Synthetic oligonucleotide probe | |
| <400> acacct | | 20 |
| <210><211><212><212><213> | 24 | |
| | Description of Artificial Sequence: Synthetic oligonucleotide probe | |
| <400> taggaa | | 24 |
| <210><211><211><212><213> | 20 | |
| <220> <223> | Description of Artificial Sequence: Synthetic oligonucleotide probe | |
| <400> ttgcct | 124 ttact caggtgctac | 20 |
| <210><211><212><212><213> | 20 | |
| <220> | Description of Artificial Sequence: Synthetic | |

oligonucleotide probe

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<400> 125
                                                                  20
actcagcagt ggtaggaaag
<210> 126
<211> 1210
<212> DNA
<213> Homo sapiens
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geetggagge egeegegage eegettteea eecegacete tgeecaggee geaggeecea 180
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ggattgagcc atgtacccag aaagggcaat gcccaccgcc ccctggcctc ccctgcccct 360
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ggegetgega eggeeaceca gaetgteeeg acteeagega egagetegge tgtggaacea 540
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<212> PRT
<213> Homo sapiens
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Ala Ala Ala Ser Pro Leu Ser Thr Pro Thr Ser Ala Gln Ala Ala Gly
                              40
Pro Ser Ser Gly Ser Cys Pro Pro Thr Lys Phe Gln Cys Arg Thr Ser
                          55
     50
Gly Leu Cys Val Pro Leu Thr Trp Arg Cys Asp Arg Asp Leu Asp Cys
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                      70
 65
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Ser Asp Gly Ser Asp Glu Glu Glu Cys Arg Ile Glu Pro Cys Thr Gln 85 90 95

Lys Gly Gln Cys Pro Pro Pro Pro Gly Leu Pro Cys Pro Cys Thr Gly
100 105 110

Val Ser Asp Cys Ser Gly Gly Thr Asp Lys Leu Arg Asn Cys Ser 115 120 125

Arg Leu Ala Cys Leu Ala Gly Glu Leu Arg Cys Thr Leu Ser Asp Asp 130 135 140

Cys Ile Pro Leu Thr Trp Arg Cys Asp Gly His Pro Asp Cys Pro Asp 145 150 155 160

Ser Ser Asp Glu Leu Gly Cys Gly Thr Asn Glu Ile Leu Pro Glu Gly 165 170 175

Asp Ala Thr Thr Met Gly Pro Pro Val Thr Leu Glu Ser Val Thr Ser 180 185 190

Leu Arg Asn Ala Thr Thr Met Gly Pro Pro Val Thr Leu Glu Ser Val
195 200 205

Pro Ser Val Gly Asn Ala Thr Ser Ser Ser Ala Gly Asp Gln Ser Gly 210 215 220

Ser Pro Thr Ala Tyr Gly Val Ile Ala Ala Ala Ala Val Leu Ser Ala 225 230 235 240

Ser Leu Val Thr Ala Thr Leu Leu Leu Leu Ser Trp Leu Arg Ala Gln 245 250 255

Glu Arg Leu Arg Pro Leu Gly Leu Leu Val Ala Met Lys Glu Ser Leu 260 265 270

Leu Leu Ser Glu Gln Lys Thr Ser Leu Pro 275 280

<210> 128

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide probe

<400> 128

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<210> 129

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<211> 24
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
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<400> 129
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<210> 130
<211> 50
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide probe
<400> 130
                                                                   50
gaggaggagt gcaggattga gccatgtacc cagaaagggc aatgcccacc
<210> 131
<211> 1843
<212> DNA
<213> Homo sapiens
<220>
<221> modified base
<222> (1837)
<223> a, t, c or g
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cagactettg caagetggat geeetetgtg gatgaaagat gtateatgga atgaaceega 180
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agcaaacgtg gcccagcacc catgagaccc tcctgaccac gtggaagatt gtggcgttca 1140
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<212> PRT
<213> Homo sapiens
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Gln Gln Gln Gln Gln Pro Gln Ser Pro Gln Arg Leu Leu Ala Val
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             20
Ile Leu Trp Phe Gln Leu Ala Leu Cys Phe Gly Pro Ala Gln Leu Thr
Gly Gly Phe Asp Asp Leu Gln Val Cys Ala Asp Pro Gly Ile Pro Glu
                                              60
                         55
Asn Gly Phe Arg Thr Pro Ser Gly Gly Val Phe Phe Glu Gly Ser Val
                                          75
 65
Ala Arg Phe His Cys Gln Asp Gly Phe Lys Leu Lys Gly Ala Thr Lys
                                      90
Arg Leu Cys Leu Lys His Phe Asn Gly Thr Leu Gly Trp Ile Pro Ser
                                 105
            100
Asp Asn Ser Ile Cys Val Gln Glu Asp Cys Arg Ile Pro Gln Ile Glu
                             120
        115
Asp Ala Glu Ile His Asn Lys Thr Tyr Arg His Gly Glu Lys Leu Ile
                                             140
                         135
Ile Thr Cys His Glu Gly Phe Lys Ile Arg Tyr Pro Asp Leu His Asn
                                         155
145
Met Val Ser Leu Cys Arg Asp Asp Gly Thr Trp Asn Asn Leu Pro Ile
                                     170
                 165
Cys Gln Gly Cys Leu Arg Pro Leu Ala Ser Ser Asn Gly Tyr Val Asn
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| | | | 180 | | | | | 185 | | | | | 190 | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ile | Ser | Glu 195 | Leu | Gln | Thr | Ser | Phe 200 | Pro | Val | Gly | Thr | Val 205 | Ile | Ser | Tyr |
| Arg | Cys 210 | Phe | Pro | Gly | Phe | Lys 215 | Leu | Asp | Gly | Ser | Ala 220 | Tyr | Leu | Glu | Cys |
| Leu 225 | Gln | Asn | Leu | Ile | Trp 230 | Ser | Ser | Ser | Pro | Pro 235 | Arg | Cys | Leu | Ala | Leu 240 |
| Glu | Ala | Gln | Val | Cys 245 | Pro | Leu | Pro | Pro | Met 250 | Val | Ser | His | Gly | Asp 255 | Phe |
| Val | Cys | His | Pro 260 | Arg | Pro | Cys | Glu | Arg 265 | Tyr | Asn | His | Gly | Thr 270 | Val | Val |
| Glu | Phe | Tyr 275 | Cys | Asp | Pro | Gly | Tyr 280 | Ser | Leu | Thr | Ser | Asp 285 | Tyr | Lys | Tyr |
| Ile | Thr 290 | Cys | Gln | Tyr | Gly | Glu 295 | Trp | Phe | Pro | Ser | Tyr 300 | Gln | Val | Tyr | Cys |
| Ile 305 | Lys | Ser | Glu | Gln | Thr 310 | Trp | Pro | Ser | Thr | His 315 | Glu | Thr | Leu | Leu | Thr 320 |
| Thr | Trp | Lys | Ile | Val 325 | Ala | Phe | Thr | Ala | Thr 330 | Ser | Val | Leu | Leu | Val 335 | Leu |
| Leu | Leu | Val | Ile 340 | Leu | Ala | Arg | Met | Phe 345 | Gln | Thr | Lys | Phe | Lys 350 | Ala | His |
| Phe | Pro | Pro 355 | Arg | Gly | Pro | Pro | Arg 360 | Ser | Ser | Ser | Ser | Asp 365 | Pro | Asp | Phe |
| Val | Val 370 | Val | Asp | Gly | Val | Pro 375 | Val | Met | Leu | Pro | Ser 380 | | Asp | Glu | Ala |
| Val 385 | Ser | Gly | Gly | Leu | Ser 390 | | Leu | Gly | | Gly 395 | | Met | Ala | Ser | Val 400 |
| Gly | Gln | Gly | Cys | Pro 405 | | Pro | Val | Asp | Asp 410 | | Ser | Pro | Pro | Ala 415 | Tyr |
| Pro | Gly | Ser | Gly 420 | | Thr | Asp | Thr | Gly 425 | | Gly | Glu | Ser | Glu 430 | Thr | Cys |
| Asp | Ser | Val 435 | | Gly | Ser | Ser | Glu 440 | | Leu | Gln | . Ser | Leu 445 | | Ser | Pro |
| Pro | Arg 450 | _ | Gln | Glu | . Ser | Thr 455 | | Pro | Ala | Ser | Asp 460 | | Pro | Asp | Ile |

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465
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His Ala His Trp Val Leu Phe Leu Arg Asn
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<210> 133
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<210> 134
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                                                                    23
agccaggatc gcagtaaaac tcc
<210> 135
<211> 50
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<223> Description of Artificial Sequence: Synthetic
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<210> 136
<211> 1815
<212> DNA
<213> Homo sapiens
 <400> 136
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gatgctgctg ccgcggttgc agttgtcgcg cacgcctctg cccgccagcc cgctccaccg 120
ccgtagcgcc cgagtgtcgg ggggcgcacc cgagtcgggc catgaggccg ggaaccgcgc 180
tacaggccgt gctgctggcc gtgctgctgg tggggctgcg ggccgcgacg ggtcgcctgc 240
 tgagtgcctc ggatttggac ctcagaggag ggcagccagt ctgccgggga gggacacaga 300
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Asp Leu Arg Gly Gly Gln Pro Val Cys Arg Gly Gly Thr Gln Arg Pro
Cys Tyr Lys Val Ile Tyr Phe His Asp Thr Ser Arg Arg Leu Asn Phe
Glu Glu Ala Lys Glu Ala Cys Arg Arg Asp Gly Gly Gln Leu Val Ser
                                          75
Ile Glu Ser Glu Asp Glu Gln Lys Leu Ile Glu Lys Phe Ile Glu Asn
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Leu Leu Pro Ser Asp Gly Asp Phe Trp Ile Gly Leu Arg Arg Arg Glu 105

- Glu Lys Gln Ser Asn Ser Thr Ala Cys Gln Asp Leu Tyr Ala Trp Thr 115 120 125
- Asp Gly Ser Ile Ser Gln Phe Arg Asn Trp Tyr Val Asp Glu Pro Ser 130 135 140
- Cys Gly Ser Glu Val Cys Val Val Met Tyr His Gln Pro Ser Ala Pro 145 150 155 160
- Ala Gly Ile Gly Gly Pro Tyr Met Phe Gln Trp Asn Asp Asp Arg Cys 165 170 175
- Asn Met Lys Asn Asn Phe Ile Cys Lys Tyr Ser Asp Glu Lys Pro Ala 180 185 190
- Val Pro Ser Arg Glu Ala Glu Gly Glu Glu Thr Glu Leu Thr Thr Pro 195 200 205
- Val Leu Pro Glu Glu Thr Gln Glu Glu Asp Ala Lys Lys Thr Phe Lys 210 215 220
- Glu Ser Arg Glu Ala Ala Leu Asn Leu Ala Tyr Ile Leu Ile Pro Ser 225 230 235 240
- Ile Pro Leu Leu Leu Leu Val Val Thr Thr Val Val Cys Trp Val 245 250 255
- Trp Ile Cys Arg Lys Arg Lys Arg Glu Gln Pro Asp Pro Ser Thr Lys 260 265 270
- Lys Gln His Thr Ile Trp Pro Ser Pro His Gln Gly Asn Ser Pro Asp 275 280 285
- Leu Glu Val Tyr Asn Val Ile Arg Lys Gln Ser Glu Ala Asp Leu Ala 290 295 300
- Glu Thr Arg Pro Asp Leu Lys Asn Ile Ser Phe Arg Val Cys Ser Gly 305 310 310 315
- Glu Ala Thr Pro Asp Asp Met Ser Cys Asp Tyr Asp Asn Met Ala Val 325 330 335
- Asn Pro Ser Glu Ser Gly Phe Val Thr Leu Val Ser Val Glu Ser Gly 340 345 350
- Phe Val Thr Asn Asp Ile Tyr Glu Phe Ser Pro Asp Gln Met Gly Arg 355 360 365
- Ser Lys Glu Ser Gly Trp Val Glu Asn Glu Ile Tyr Gly Tyr 370 375 380

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Lys Leu Lys Met Val Gln Val Val Phe Arg His Gly Ala Arg Ser Pro
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Leu Lys Pro Leu Pro Leu Glu Glu Gln Val Glu Trp Asn Pro Gln Leu
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Leu Glu Val Pro Pro Gln Thr Gln Phe Asp Tyr Thr Val Thr Asn Leu
Ala Gly Gly Pro Lys Pro Tyr Ser Pro Tyr Asp Ser Gln Tyr His Glu
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Thr Thr Leu Lys Gly Gly Met Phe Ala Gly Gln Leu Thr Lys Val Gly
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Met Gln Gln Met Phe Ala Leu Gly Glu Arg Leu Arg Lys Asn Tyr Val
                         135
Glu Asp Ile Pro Phe Leu Ser Pro Thr Phe Asn Pro Gln Glu Val Phe
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145
Ile Arg Ser Thr Asn Ile Phe Arg Asn Leu Glu Ser Thr Arg Cys Leu
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                 165
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Trp Ser Leu Arg Gln Arg Thr Arg Gly Arg Arg Gln Thr Ala Ser Leu 210 215 220

Gln Pro Gly Ile Ser Glu Asp Leu Lys Lys Val Lys Asp Arg Met Gly 225 230 235 235

Ile Asp Ser Ser Asp Lys Val Asp Phe Phe Ile Leu Leu Asp Asn Val 245 250 255

Ala Ala Glu Gln Ala His Asn Leu Pro Ser Cys Pro Met Leu Lys Arg 260 265 270

Phe Ala Arg Met Ile Glu Gln Arg Ala Val Asp Thr Ser Leu Tyr Ile 275 280 285

Leu Pro Lys Glu Asp Arg Glu Ser Leu Gln Met Ala Val Gly Pro Phe 290 295 300

Leu His Ile Leu Glu Ser Asn Leu Leu Lys Ala Met Asp Ser Ala Thr 305 310 315 320

Ala Pro Asp Lys Ile Arg Lys Leu Tyr Leu Tyr Ala Ala His Asp Val 325 330 335

Thr Phe Ile Pro Leu Leu Met Thr Leu Gly Ile Phe Asp His Lys Trp 340 345 350

Pro Pro Phe Ala Val Asp Leu Thr Met Glu Leu Tyr Gln His Leu Glu 355 360 365

Ser Lys Glu Trp Phe Val Gln Leu Tyr Tyr His Gly Lys Glu Gln Val 370 375 380

Pro Arg Gly Cys Pro Asp Gly Leu Cys Pro Leu Asp Met Phe Leu Asn 385 390 395 400

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| <400> tcctt | 145 cccgt ggtaatagag ctgc | 24 |
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| <400> ggcag | · 146 ragaac cagaggccgg aggagactgc ctctttacag ccagg | 45 |
| <212> | 1686 | |
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Cys Glu Gly Arg Val Glu Val Glu Gln Lys Gly Gln Trp Gly Thr Val
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 Cys Asp Asp Gly Trp Asp Ile Lys Asp Val Ala Val Leu Cys Arg Glu
 Leu Gly Cys Gly Ala Ala Ser Gly Thr Pro Ser Gly Ile Leu Tyr Glu
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                      70
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Pro Pro Ala Glu Lys Glu Gln Lys Val Leu Ile Gln Ser Val Ser Cys

Thr Gly Thr Glu Asp Thr Leu Ala Gln Cys Glu Gln Glu Glu Val Tyr 105

110

85

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Ser Ser Phe Ser Pro Val Pro Glu Gly Val Arg Leu Ala Asp Gly Pro 130 135 140

Gly His Cys Lys Gly Arg Val Glu Val Lys His Gln Asn Gln Trp Tyr 145 150 155 160

Thr Val Cys Gln Thr Gly Trp Ser Leu Arg Ala Ala Lys Val Cys 165 170 175

Arg Gln Leu Gly Cys Gly Arg Ala Val Leu Thr Gln Lys Arg Cys Asn 180 185 190

Lys His Ala Tyr Gly Arg Lys Pro Ile Trp Leu Ser Gln Met Ser Cys
195 200 205

Ser Gly Arg Glu Ala Thr Leu Gln Asp Cys Pro Ser Gly Pro Trp Gly 210 215 220

Lys Asn Thr Cys Asn His Asp Glu Asp Thr Trp Val Glu Cys Glu Asp 225 230 235 240

Pro Phe Asp Leu Arg Leu Val Gly Gly Asp Asn Leu Cys Ser Gly Arg 245 250 255

Leu Glu Val Leu His Lys Gly Val Trp Gly Ser Val Cys Asp Asp Asn 260 265 270

Trp Gly Glu Lys Glu Asp Gln Val Val Cys Lys Gln Leu Gly Cys Gly 275 280 285

Lys Ser Leu Ser Pro Ser Phe Arg Asp Arg Lys Cys Tyr Gly Pro Gly 290 295 300

Val Gly Arg Ile Trp Leu Asp Asn Val Arg Cys Ser Gly Glu Glu Gln 305 310 315 320

Ser Leu Glu Gln Cys Gln His Arg Phe Trp Gly Phe His Asp Cys Thr 325 330 335

His Gln Glu Asp Val Ala Val Ile Cys Ser Val 340 345

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<211> 24

<212> DNA

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<220>

<223> Description of Artificial Sequence: Synthetic

oligonucleotide probe

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| <210> 152 <211> 1427 <212> DNA <213> Homo sapiens | | | | | | | | | | | | |
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<210> 153

<211> 310

<212> PRT

<213> Homo sapiens

<400> 153

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Ala Tyr Leu Arg Asn Ala Val Val Val Ile Thr Gly Ala Thr Ser Gly 35 40 45

Leu Gly Lys Glu Cys Ala Lys Val Phe Tyr Ala Ala Gly Ala Lys Leu 50 55 60

Val Leu Cys Gly Arg Asn Gly Gly Ala Leu Glu Glu Leu Ile Arg Glu
65 70 75 80

Leu Thr Ala Ser His Ala Thr Lys Val Gln Thr His Lys Pro Tyr Leu
85 90 95

Val Thr Phe Asp Leu Thr Asp Ser Gly Ala Ile Val Ala Ala Ala Ala 100 105 110

Glu Ile Leu Gln Cys Phe Gly Tyr Val Asp Ile Leu Val Asn Asn Ala 115 120 125

Gly Ile Ser Tyr Arg Gly Thr Ile Met Asp Thr Thr Val Asp Val Asp 130 135 140

Lys Arg Val Met Glu Thr Asn Tyr Phe Gly Pro Val Ala Leu Thr Lys 145 150 155 160

Ala Leu Leu Pro Ser Met Ile Lys Arg Arg Gln Gly His Ile Val Ala 165 170 175

Ile Ser Ser Ile Gln Gly Lys Met Ser Ile Pro Phe Arg Ser Ala Tyr 180 185 190

Ala Ala Ser Lys His Ala Thr Gln Ala Phe Phe Asp Cys Leu Arg Ala

Glu Met Glu Gln Tyr Glu Ile Glu Val Thr Val Ile Ser Pro Gly Tyr

| | 210 | | | | | 215 | | | | | 220 | | | | | |
|--|------------------------------|-----------------|----------------|--------------|----------------|--------------|------------|------------|------------|------------|----------------|------------|------------|------------|------------|----|
| Ile 225 | His | Thr | Asn | Leu | Ser 230 | Val | Asn | Ala | Ile | Thr 235 | Ala | Asp | Gly | Ser | Arg 240 | |
| Tyr | Gly | Val | Met | Asp 245 | Thr | Thr | Thr | Ala | Gln 250 | Gly | Arg | Ser | Pro | Val 255 | Glu | |
| Val | Ala | Gln | Asp 260 | Val | Leu | Ala | Ala | Val 265 | Gly | Lys | Lys | Lys | Lys 270 | Asp | Val | |
| Ile | Leu | Ala 275 | Asp | Leu | Leu | Pro | Ser 280 | Leu | Ala | Val | Tyr | Leu 285 | Arg | Thr | Leu | |
| Ala | Pro 290 | Gly | Leu | Phe | Phe | Ser 295 | Leu | Met | Ala | Ser | Arg 300 | Ala | Arg | Lys | Glu | |
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| <22 | 3> D | escr | ipti nucl | on c eoti | of Ar .de p | tifi robe | cial | . Sec | luenc | e: S | syntr | etic | : | | | |
| | 0> 1 ggca | | tgag | ıcatt | cc | | | | | | | | | | | 20 |
| <21 <21 | 0> 1 1> 2 2> E 3> A | 4 NA | icia | al Se | equer | ıce | | | | | | | | | | |
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Gly Arg Leu Thr Ala Tyr Glu Phe Ala Lys Leu Lys Ser Lys Leu Val 50 55 60

Leu Trp Asp Ile Asn Lys His Gly Leu Glu Glu Thr Ala Ala Lys Cys 65 70 75 80

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Val Ser Val Pro Phe Leu Leu Ala Tyr Cys Ser Ser Lys Phe Ala Ala 180 185 190

Val Gly Phe His Lys Thr Leu Thr Asp Glu Leu Ala Ala Leu Gln Ile 195 200 205

Thr Gly Val Lys Thr Thr Cys Leu Cys Pro Asn Phe Val Asn Thr Gly 210 215 220

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Pro Phe Pro Gly Leu Asn Met Lys Ser Tyr Ala Gly Phe Leu Thr Val

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| Ile | Gln | Pro | Glu 100 | Asp | Ala | Pro | Val | Val 105 | Leu | Trp | Leu | Gln | Gly 110 | Gly | Pro |
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| Phe | Thr | Asp | Asp | Thr 165 | His | Gly | Tyr | Ala | Val 170 | Asn | Glu | Asp | Asp | Val 175 | Ala |
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| Asp | Pro | Glu | Ser | Ile 245 | Ile | Gly | Gly | Tyr | Ala 250 | Glu | Phe | Leu | Tyr | Gln 255 | Ile |
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| Ile | Leu 290 | Asp | Lys | Leu | Leu | Asp 295 | Gly | Asp | Leu | Thr | Ser 300 | Asp | Pro | Ser | Tyr |
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| Thr | Glu | Pro | Glu | Asp 325 | Gln | Leu | Tyr | Tyr | Val 330 | Lys | Phe | Leu | Ser | Leu 335 | Pro |
| Glu | Val | Arg | Gln 340 | Ala | Ile | His | Val | Gly 345 | Asn | Gln | Thr | Phe | Asn 350 | Asp | Gly |

Thr Ile Val Glu Lys Tyr Leu Arg Glu Asp Thr Val Gln Ser Val Lys 360 Pro Trp Leu Thr Glu Ile Met Asn Asn Tyr Lys Val Leu Ile Tyr Asn 375 Gly Gln Leu Asp Ile Ile Val Ala Ala Ala Leu Thr Glu Arg Ser Leu 395 390 385 Met Gly Met Asp Trp Lys Gly Ser Gln Glu Tyr Lys Lys Ala Glu Lys 410 Lys Val Trp Lys Ile Phe Lys Ser Asp Ser Glu Val Ala Gly Tyr Ile 425 Arq Gln Ala Gly Asp Phe His Gln Val Ile Ile Arg Gly Gly His 440 435 Ile Leu Pro Tyr Asp Gln Pro Leu Arg Ala Phe Asp Met Ile Asn Arg Phe Ile Tyr Gly Lys Gly Trp Asp Pro Tyr Val Gly <210> 165 <211> 24 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide probe <400> 165 24 ttccatgcca cctaagggag actc <210> 166 <211> 24 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide probe <400> 166 24 tggatgaggt gtgcaatggc tggc <210> 167 <211> 24 <212> DNA <213> Artificial Sequence

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Leu Leu Ala Pro Pro Ala Ala Gly Met Pro Gln Phe Ser Thr Phe His
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Ser Glu Asn Arq Asp Trp Thr Phe Asn His Leu Thr Val His Gln Gly
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Thr Gly Ala Val Tyr Val Gly Ala Ile Asn Arg Val Tyr Lys Leu Thr
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Asn Lys Ser Arg Tyr Pro Pro Leu Ile Val Gln Pro Cys Ser Glu Val
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                165
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- Leu Leu Arg Leu Asp Asp Leu Phe Ile Leu Val Glu Pro Ser His Lys
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- Lys Glu His Tyr Leu Ser Ser Val Asn Lys Thr Gly Thr Met Tyr Gly 210 215 220
- Val Ile Val Arg Ser Glu Gly Glu Asp Gly Lys Leu Phe Ile Gly Thr 225 230 235 240
- Ala Val Asp Gly Lys Gln Asp Tyr Phe Pro Thr Leu Ser Ser Arg Lys
 245 250 255
- Leu Pro Arg Asp Pro Glu Ser Ser Ala Met Leu Asp Tyr Glu Leu His
 260 265 270
- Ser Asp Phe Val Ser Ser Leu Ile Lys Ile Pro Ser Asp Thr Leu Ala 275 280 285
- Leu Val Ser His Phe Asp Ile Phe Tyr Ile Tyr Gly Phe Ala Ser Gly 290 295 300
- Gly Phe Val Tyr Phe Leu Thr Val Gln Pro Glu Thr Pro Glu Gly Val 305 310 315 320
- Ala Ile Asn Ser Ala Gly Asp Leu Phe Tyr Thr Ser Arg Ile Val Arg 325 330 335
- Leu Cys Lys Asp Asp Pro Lys Phe His Ser Tyr Val Ser Leu Pro Phe 340 345 350
- Gly Cys Thr Arg Ala Gly Val Glu Tyr Arg Leu Leu Gln Ala Ala Tyr 355 360 365
- Leu Ala Lys Pro Gly Asp Ser Leu Ala Gln Ala Phe Asn Ile Thr Ser 370 375 380
- Gln Asp Asp Val Leu Phe Ala Ile Phe Ser Lys Gly Gln Lys Gln Tyr 385 390 395 400
- His His Pro Pro Asp Asp Ser Ala Leu Cys Ala Phe Pro Ile Arg Ala
 405 410 415
- Ile Asn Leu Gl
n Ile Lys Glu Arg Leu Gl
n Ser Cys Tyr Gl
n Gly Glu $420 \hspace{1.5cm} 425 \hspace{1.5cm} 430 \hspace{1.5cm}$
- Gly Asn Leu Glu Leu Asn Trp Leu Leu Gly Lys Asp Val Gln Cys Thr 435 440 445
- Lys Ala Pro Val Pro Ile Asp Asp Asn Phe Cys Gly Leu Asp Ile Asn

| 4! | 50 | | | | 455 | | | | | 460 | | | | | |
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| Tyr S | er Val | Val 500 | Phe | Val | Gly | Thr | Lys 505 | Ser | Gly | Lys | Leu | Lys 510 | Lys | Val | |
| Arg V | al Tyr 515 | Glu | Phe | Arg | Cys | Ser 520 | Asn | Ala | Ile | His | Leu 525 | Leu | Ser | Lys | |
| | er Leu 30 | Leu | Glu | Gly | Ser 535 | Tyr | Trp | Trp | Arg | Phe 540 | Asn | Tyr | Arg | Gln | |
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| <211><212><213> | | icial | l Sed | quen | ce | | | | | | | | | | |
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Arg Leu Leu Lys Met Lys Ala Cys Gly Leu Asn Thr Leu Thr Thr Tyr
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- Asn Gly Ser Arg Asp Leu Ile Ala Phe Leu Asn Glu Ala Ala Leu Ala 100 105 110
- Asn Leu Leu Val Ile Leu Arg Pro Gly Pro Tyr Ile Cys Ala Glu Trp 115 120 125
- Glu Met Gly Gly Leu Pro Ser Trp Leu Leu Arg Lys Pro Glu Ile His 130 135 140
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- Lys Cys Gly Ser Leu Arg Gly Leu Tyr Thr Thr Val Asp Phe Gly Pro 225 230 235 240
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- Glu Ala Gly Asp Pro Thr Pro Lys Leu Phe Ala Leu Arg Asp Val Ile

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| Pro | Met | Thr | Phe | Glu 405 | Ala | Val | Lys | Gln | Asp 410 | His | Gly | Phe | Met | Leu 415 | Tyr |
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| Leu | Ser | Phe | Gly | Ser 485 | Asn | Ser | Ser | Asp | Phe 490 | Lys | Gly | Leu | Leu | Lys 495 | Pro |
| Pro | Ile | Leu | Gly 500 | Gln | Thr | Ile | Leu | Thr 505 | Gln | Trp | Met | Met | Phe 510 | Pro | Leu |
| Lys | Ile | Asp 515 | Asn | Leu | Val | Lys | Trp 520 | Trp | Phe | Pro | Leu | Gln 525 | Leu | Pro | Lys |
| Trp | Pro 530 | Tyr | Pro | Gln | Ala | Pro 535 | Ser | Gly | Pro | Thr | Phe 540 | Tyr | Ser | Lys | Thr |
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| Leu | Phe | Pro 595 | Arg | Gly | Ala | Leu | Asn 600 | Lys | Ile | Thr | Leu | Leu 605 | Glu | Leu | Glu |
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185

190

180

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- Asn Leu Thr Lys Val Pro Ser Asn Ile Thr Asp Val Ala Pro His Leu 245 250 255
- Thr Lys Leu Val Ile His Asn Asp Gly Thr Lys Leu Leu Val Leu Asn 260 265 270
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- Glu Leu Glu Arg Ile Pro His Ala Ile Phe Ser Leu Ser Asn Leu Gln 290 295 300
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- Thr Val Ser Leu Gly Gly Ala Asn Met Ala Glu Thr His Lys Ala Met 35 40 45
- Ile Leu Gln Leu Asn Pro Ser Glu Asn Cys Thr Trp Thr Ile Glu Arg
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Pro Leu Asn Gly Cys Gly Thr Ile Arg Lys Val Glu Asp Gln Ser Ile 325 330 335

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Glu Ser Asn Ser Phe Glu Lys Thr Ile Leu Glu Ser Pro Tyr Tyr Val 405 410 415

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- Ser Val Pro Ser Phe Gly Ser Glu Trp Phe Trp Trp Trp Trp Gln Lys
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- Ser Phe Lys Tyr Glu Asp Phe Gly Pro Leu Phe Thr Ala Lys Phe Phe 100 105 110
- Asn Ala Asn Gln Trp Ala Asp Ile Phe Gln Ala Ser Gly Ala Lys Tyr 115 120 125
- Ile Val Leu Thr Ser Lys His His Glu Gly Phe Thr Leu Trp Gly Ser 130 135 140
- Glu Tyr Ser Trp Asn Trp Asn Ala Ile Asp Glu Gly Pro Lys Arg Asp 145 150 155 160
- Ile Val Lys Glu Leu Glu Val Ala Ile Arg Asn Arg Thr Asp Leu Arg
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- Phe Gly Leu Tyr Tyr Ser Leu Phe Glu Trp Phe His Pro Leu Phe Leu 180 185 190
- Glu Asp Glu Ser Ser Ser Phe His Lys Arg Gln Phe Pro Val Ser Lys
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- Leu Trp Ser Asp Gly Asp Gly Gly Ala Pro Asp Gln Tyr Trp Asn Ser 225 230 235 240
- Thr Gly Phe Leu Ala Trp Leu Tyr Asn Glu Ser Pro Val Arg Gly Thr 245 250 255
- Val Val Thr Asn Asp Arg Trp Gly Ala Gly Ser Ile Cys Lys His Gly 260 265 270
- Gly Phe Tyr Thr Cys Ser Asp Arg Tyr Asn Pro Gly His Leu Leu Pro 275 280 285
- His Lys Trp Glu Asn Cys Met Thr Ile Asp Lys Leu Ser Trp Gly Tyr 290 295 300
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Leu Pro Thr Gln Arg Glu Asp Gly Asn Pro Cys Asp Phe Asp Trp Arg
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Arg Arg Ser Ile Thr Val Glu Gln His Ile Gly Asn Ile Phe Met Phe $85\,$ 90 95

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Thr Ile Asp Glu Glu Leu Glu Arg Asp Lys Arg Val Thr Trp Ile Val 145 150 155 160

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Tyr Ala Asp Leu Ser Leu Lys Tyr Asn Cys Thr Gly Leu Asn Phe Gly 180 185 190

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Ser Thr Ser Pro Leu Thr Lys Gln Leu Pro Thr Leu Ile Leu Phe Gln 210 215 220

Gly Gly Lys Glu Ala Met Arg Arg Pro Gln Ile Asp Lys Lys Gly Arg 225 230 235 240

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Gly Asp Tyr Gln Gly Arg Val His Leu Arg Gln Asp Lys Glu His Asp

105

110

100

115 120 125 Val Ser Leu Glu Ile Gln Asp Leu Arg Leu Glu Asp Tyr Gly Arg Tyr 135 Arg Cys Glu Val Ile Asp Gly Leu Glu Asp Glu Ser Gly Leu Val Glu 155 Leu Glu Leu Arg Gly Val Val Phe Pro Tyr Gln Ser Pro Asn Gly Arg Tyr Gln Phe Asn Phe His Glu Gly Gln Gln Val Cys Ala Glu Gln Ala 185 Ala Val Val Ala Ser Phe Glu Gln Leu Phe Arg Ala Trp Glu Glu Gly Leu Asp Trp Cys Asn Ala Gly Trp Leu Gln Asp Ala Thr Val Gln Tyr 215 Pro Ile Met Leu Pro Arg Gln Pro Cys Gly Gly Pro Gly Leu Ala Pro 230 235 Gly Val Arg Ser Tyr Gly Pro Arg His Arg Arg Leu His Arg Tyr Asp 245 Val Phe Cys Phe Ala Thr Ala Leu Lys Gly Arg Val Tyr Tyr Leu Glu 265 His Pro Glu Lys Leu Thr Leu Thr Glu Ala Arg Glu Ala Cys Gln Glu Asp Asp Ala Thr Ile Ala Lys Val Gly Gln Leu Phe Ala Ala Trp Lys 290 295 Phe His Gly Leu Asp Arg Cys Asp Ala Gly Trp Leu Ala Asp Gly Ser Val Arg Tyr Pro Val Val His Pro His Pro Asn Cys Gly Pro Pro Glu 325 Pro Gly Val Arg Ser Phe Gly Phe Pro Asp Pro Gln Ser Arg Leu Tyr 345 Gly Val Tyr Cys Tyr Arg Gln His <210> 214 <211> 18 <212> DNA <213> Artificial Sequence <220>

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| <210><211><212><213> | 18 | | | |
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| Arg | Val | His | | . Ala | Ala | Pro | Leu 40 | Ser | Asp | Ala | Pro | His 45 | Asp | Asp | Ala · |
| His | Gly 50 | | Phe | Gln | Tyr | Asp 55 | | Glu | . Ala | Phe | Leu 60 | Gly | Arg | Glu | Val |
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| His | Pro | Glu 195 | Glu | Phe | Pro | His | Met 200 | Arg | Asp | Ile | Val | Ile 205 | Ala | Glu | Thr |
| Leu | Glu 210 | Asp | Leu | Asp | Arg | Asn 215 | Lys | Asp | Gly | Tyr | Val 220 | Gln | Val | Glu | Glu |
| Tyr 225 | Ile | Ala | Asp | Leu | Tyr 230 | Ser | Ala | Glu | Pro | Gly 235 | Glu | Glu | Glu | Pro | Ala 240 |
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| Lys | Asp | Gly | His 260 | Leu | Asp | Gly | Ser | Glu 265 | Val | Gly | His | Trp | Val 270 | Leu | Pro |
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Gly Arg Glu Asn Tyr Ser Ser Val Asp Ala Asn Gly Ile Gln Ser Gln 100 105 110

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Ser Thr Gln Glu Ala Thr Gly Gln Ala Val Ser Thr Ala His Pro Pro 130 135 140

Thr Gly Lys Arg Leu Lys Lys Thr Pro Glu Lys Lys Thr Gly Asn Lys 145 150 155 160

Asp Cys Lys Ala Asp Ile Ala Phe Leu Ile Asp Gly Ser Phe Asn Ile 165 170 175

Gly Gln Arg Arg Phe Asn Leu Gln Lys Asn Phe Val Gly Lys Val Ala 180 185 190

Leu Met Leu Gly Ile Gly Thr Glu Gly Pro His Val Gly Leu Val Gln 195 200 205

Ala Ser Glu His Pro Lys Ile Glu Phe Tyr Leu Lys Asn Phe Thr Ser 210 215 220

Ala Lys Asp Val Leu Phe Ala Ile Lys Glu Val Gly Phe Arg Gly Gly 225 230 235 240

Asn Ser Asn Thr Gly Lys Ala Leu Lys His Thr Ala Gln Lys Phe Phe 245 250 255

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- Phe Ile Asp Gly Trp Pro Ser Asp Asp Ile Glu Glu Ala Gly Ile Val 275 280 285
- Ala Arg Glu Phe Gly Val Asn Val Phe Ile Val Ser Val Ala Lys Pro 290 295 300
- Ile Pro Glu Glu Leu Gly Met Val Gln Asp Val Thr Phe Val Asp Lys 305 310 315 320
- Ala Val Cys Arg Asn Asn Gly Phe Phe Ser Tyr His Met Pro Asn Trp 325 330 335
- Phe Gly Thr Thr Lys Tyr Val Lys Pro Leu Val Gln Lys Leu Cys Thr 340 345 350
- His Glu Gln Met Met Cys Ser Lys Thr Cys Tyr Asn Ser Val Asn Ile 355 360 365
- Ala Phe Leu Ile Asp Gly Ser Ser Ser Val Gly Asp Ser Asn Phe Arg 370 375 380
- Leu Met Leu Glu Phe Val Ser Asn Ile Ala Lys Thr Phe Glu Ile Ser 385 390 395 400
- Asp Ile Gly Ala Lys Ile Ala Ala Val Gln Phe Thr Tyr Asp Gln Arg 405 410 415
- Thr Glu Phe Ser Phe Thr Asp Tyr Ser Thr Lys Glu Asn Val Leu Ala 420 425 430
- Val Ile Arg Asn Ile Arg Tyr Met Ser Gly Gly Thr Ala Thr Gly Asp 435 440 445
- Ala Ile Ser Phe Thr Val Arg Asn Val Phe Gly Pro Ile Arg Glu Ser 450 455 460
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- Asp Val Gln Gly Pro Ala Ala Ala Ala His Asp Ala Gly Ile Thr Ile 485 490 495
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Arg Glu Ile His Lys Ile Thr Asn Asn Gln Thr Gly Gln Met Val Phe
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His Glu Cys Ile Ile Asp Glu Asp Cys Gly Pro Ser Met Tyr Cys Gln 145 150 155 160

Phe Ala Ser Phe Gln Tyr Thr Cys Gln Pro Cys Arg Gly Gln Arg Met 165 170 175

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Cys His Asp Pro Ala Ser Arg Leu Leu Asp Leu Ile Thr Trp Glu Leu 245 250 255

Glu Pro Asp Gly Ala Leu Asp Arg Cys Pro Cys Ala Ser Gly Leu Leu 260 265 270

Cys Gln Pro His Ser His Ser Leu Val Tyr Val Cys Lys Pro Thr Phe 275 280 285

Val Gly Ser Arg Asp Gln Asp Gly Glu Ile Leu Leu Pro Arg Glu Val 290 295 300

Pro Asp Glu Tyr Glu Val Gly Ser Phe Met Glu Glu Val Arg Gln Glu 305 310 315 320

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Ser Tyr Arg Glu Ala Thr Thr Val Asp Cys Asn Asp Leu Phe Leu 50 55 60

Thr Ala Val Pro Pro Ala Leu Pro Ala Gly Thr Gln Thr Leu Leu 65 70 75

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Tyr Leu Ala Asn Leu Thr Glu Leu Asp Leu Ser Gln Asn Ser Phe 95 100 105

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130
135

Ser Phe Ala Gly Leu Ala Ser Leu Gln Glu Leu Tyr Leu Asn His 140 145 150

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| Asp | Ser | Arg | Trp | Phe 185 | Glu | Met | Leu | Pro | Asn 190 | Leu | Glu | Ile | Leu | Met 195 |
| Ile | Gly | Gly | Asn | Lys 200 | Val | Asp | Ala | Ile | Leu 205 | Asp | Met | Asn | Phe | Arg 210 |
| Pro | Leu | Ala | Asn | Leu 215 | Arg | Ser | Leu | Val | Leu 220 | Ala | Gly | Met | Asn | Leu 225 |
| Arg | Glu | Ile | Ser | Asp 230 | Tyr | Ala | Leu | Glu | Gly 235 | Leu | Gln | Ser | Leu | Glu 240 |
| Ser | Leu | Ser | Phe | Tyr 245 | Asp | Asn | Gln | Leu | Ala 250 | Arg | Val | Pro | Arg | Arg 255 |
| Ala | Leu | Glu | Gln | Val 260 | Pro | Gly | Leu | Lys | Phe 265 | Leu | Asp | Leu | Asn | Lys 270 |
| Asn | Pro | Leu | Gln | Arg 275 | Val | Gly | Pro | Gly | Asp 280 | Phe | Ala | Asn | Met | Leu 285 |
| His | Leu | Lys | Glu | Leu 290 | Gly | Leu | Asn | Asn | Met 295 | Glu | Glu | Leu | Val | Ser 300 |
| Ile | Asp | Lys | Phe | Ala 305 | Leu | Val | Asn | Leu | Pro 310 | Glu | Leu | Thr | Lys | Leu 315 |
| Asp | Ile | Thr | Asn | Asn 320 | Pro | Arg | Leu | Ser | Phe 325 | Ile | His | Pro | Arg | Ala 330 |
| Phe | His | His | Leu | Pro 335 | Gln | Met | Glu | Thr | Leu 340 | Met | Leu | Asn | Asn | Asn 345 |
| Ala | Leu | Ser | Ala | Leu 350 | His | Gln | Gln | Thr | Val 355 | Glu | Ser | Leu | Pro | Asn 360 |
| Leu | Gln | Glu | Val | Gly 365 | Leu | His | Gly | Asn | Pro 370 | Ile | Arg | Cys | Asp | Cys 375 |
| Val | Ile | Arg | Trp | Ala 380 | Asn | Ala | Thr | Gly | Thr 385 | Arg | Val | Arg | Phe | Ile 390 |
| Glu | Pro | Gln | Ser | Thr 395 | Leu | Cys | Ala | Glu | Pro 400 | Pro | Asp | Leu | Gln | Arg 405 |
| Leu | Pro | Val | Arg | Glu | Val | Pro | Phe | Arg | Glu | Met | Thr | Asp | His | Cys |

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| Ala | Ser | Gly | Glu | Ser 440 | Met | Val | Leu | His | Cys 445 | Arg | Ala | Leu | Ala | Glu 450 |
| Pro | Glu | Pro | Glu | Ile 455 | Tyr | Trp | Val | Thr | Pro 460 | Ala | Gly | Leu | Arg | Leu 465 |
| Thr | Pro | Ala | His | Ala 470 | Gly | Arg | Arg | Tyr | Arg 475 | Val | Tyr | Pro | Glu | Gly 480 |
| Thr | Leu | Glu | Leu | Arg 485 | Arg | Val | Thr | Ala | Glu 490 | Glu | Ala | Gly | Leu | Tyr 495 |
| Thr | Cys | Val | Ala | Gln 500 | Asn | Leu | Val | Gly | Ala 505 | Asp | Thr | Lys | Thr | Val 510 |
| Ser | Val | Val | Val | Gly 515 | Arg | Ala | Leu | Leu | Gln 520 | Pro | Gly | Arg | Asp | Glu 525 |
| Gly | Gln | Gly | Leu | Glu 530 | Leu | Arg | Val | Gln | Glu 535 | Thr | His | Pro | Tyr | His 540 |
| Ile | Leu | Leu | Ser | Trp 545 | Val | Thr | Pro | Pro | Asn 550 | Thr | Val | Ser | Thr | Asn 555 |
| Leu | Thr | Trp | Ser | Ser 560 | Ala | Ser | Ser | Leu | Arg 565 | Gly | Gln | Gly | Ala | Thr 570 |
| Ala | Leu | Ala | Arg | Leu 575 | Pro | Arg | Gly | Thr | His 580 | Ser | Tyr | Asn | Ile | Thr 585 |
| Arg | Leu | Leu | Gln | Ala 590 | Thr | Glu | Tyr | Trp | Ala 595 | Cys | Leu | Gln | Val | Ala 600 |
| Phe | Ala | Asp | Ala | His 605 | Thr | Gln | Leu | Ala | Cys 610 | Val | Trp | Ala | Arg | Thr 615 |
| Lys | Glu | Ala | Thr | Ser 620 | Cys | His | Arg | Ala | Leu 625 | Gly | Asp | Arg | Pro | Gly 630 |
| Leu | Ile | Ala | Ile | Leu 635 | Ala | Leu | Ala | Val | Leu 640 | Leu | Leu | Ala | Ala | Gly 645 |
| Leu | Ala | Ala | His | Leu 650 | Gly | Thr | Gly | Gln | Pro 655 | Arg | Lys | Gly | Val | Gly 660 |
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<211> 546

<212> PRT

<213> Homo Sapien

<400> 250

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Cys Tyr Thr Val Tyr Tyr Val His Asn Ile Lys Phe Asp Val Asp $20 \\ 25 \\ 30$

Cys Thr Val Asp Ile Glu Ser Leu Thr Gly Tyr Arg Thr Tyr Arg
35 40 45

Cys Ala His Pro Leu Ala Thr Leu Phe Lys Ile Leu Ala Ser Phe
50 55 60

Tyr Ile Ser Leu Val Ile Phe Tyr Gly Leu Ile Cys Met Tyr Thr 65 70 75

Leu Trp Trp Met Leu Arg Arg Ser Leu Lys Lys Tyr Ser Phe Glu 80 85 90

Ser Ile Arg Glu Glu Ser Ser Tyr Ser Asp Ile Pro Asp Val Lys

| | | | | 95 | | | | | 100 | | | | | 105 |
|--------|-------|------|------|------------|------|------|-------|-----|------------|------|-------|-----|------|------------|
| Asn A | Asp | Phe | Ala | Phe 110 | Met | Leu | His | Leu | Ile 115 | Asp | Gln | Tyr | Asp | Pro 120 |
| Leu ' | Tyr | Ser | Lys | Arg 125 | Phe | Ala | Val | Phe | Leu 130 | Ser | Glu | Val | Ser | Glu 135 |
| Asn 1 | Lys | Leu | Arg | Gln 140 | Leu | Asn | Leu | Asn | Asn 145 | Glu | Trp | Thr | Leu | Asp 150 |
| Lys 1 | Leu | Arg | Gln | Arg 155 | Leu | Thr | Lys | Asn | Ala 160 | Gln | Asp | Lys | Leu | Glu 165 |
| Leu l | His | Leu | Phe | Met 170 | Leu | Ser | Gly | Ile | Pro 175 | Asp | Thr | Val | Phe | Asp 180 |
| Leu ' | Val | Glu | Leu | Glu 185 | Val | Leu | Lys | Leu | Glu 190 | Leu | Ile | Pro | Asp | Val 195 |
| Thr | Ile | Pro | Pro | Ser 200 | Ile | Ala | Gln | Leu | Thr 205 | Gly | Leu | Lys | Glu | Leu 210 |
| Trp 1 | Leu | Tyr | His | Thr 215 | Ala | Ala | Lys | Ile | Glu 220 | Ala | Pro | Ala | Leu | Ala 225 |
| Phe 1 | Leu | Arg | Glu | Asn 230 | Leu | Arg | Ala | Leu | His 235 | Ile | Lys | Phe | Thr | Asp 240 |
| Ile | Lys | Glu | Ile | Pro 245 | Leu | Trp | Ile | Tyr | Ser 250 | Leu | Lys | Thr | Leu | Glu 255 |
| Glu l | Leu | His | Leu | Thr 260 | Gly | Asn | Leu | Ser | Ala 265 | Glu | Asn | Asn | Arg | Tyr 270 |
| Ile ' | Val | Ile | Asp | Gly 275 | Leu | Arg | Glu | Leu | Lys 280 | Arg | Leu | Lys | Val | Leu 285 |
| Arg 1 | Leu | Lys | Ser | | Leu | Ser | Lys | Leu | | Gln | Val | Val | Thr | |
| Val (| G] +7 | Val | Иłс | 290 | Gln | Tare | T.011 | Ser | 295 Tla | 1\cn | 1) an | Glu | G] v | 300 Thr |
| Val. (| Gry | VOLL | 1115 | 305 | GIII | цую | неа | DCI | 310 | ADII | ASII | GIU | Gry | 315 |
| Lys 1 | Leu | Ile | Val | Leu 320 | Asn | Ser | Leu | Lys | Lys 325 | Met | Ala | Asn | Leu | Thr 330 |
| Glu 1 | Leu | Glu | Leu | Ile 335 | Arg | Cys | Asp | Leu | Glu 340 | Arg | Ile | Pro | His | Ser 345 |
| Ile 1 | Phe | Ser | Leu | His 350 | Asn | Leu | Gln | Glu | Ile 355 | Asp | Leu | Lys | Asp | Asn 360 |

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 tgaacgcagg agctgtcatt gactggccca cagaggaggg caaggaagta 150
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 ccagacagtt ccattctaca ttttctcaga gtcctatgga ggaaaaatgg 550
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Met Glu Leu Ala Leu Arg Arg Ser Pro Val Pro Arg Trp Leu Leu
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Leu Leu Pro Leu Leu Gly Leu Asn Ala Gly Ala Val Ile Asp 20 25 30

Trp Pro Thr Glu Glu Gly Lys Glu Val Trp Asp Tyr Val Thr Val
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<211> 452

<212> PRT

<213> Homo Sapien

<400> 255

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| | | | | 305 | | | | | 310 | | | | | 315 |
|-------------|------------|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| Pro | Ile | Arg | Lys | Lys 320 | Leu | Lys | Ile | Ile | Pro 325 | Glu | Asp | Gln | Ser | Trp 330 |
| Gly | Gly | Gln | Ala | Thr 335 | Asn | Val | Phe | Val | Asn 340 | Met | Glu | Glu | Asp | Phe 345 |
| Met | Lys | Pro | Val | Ile 350 | Ser | Ile | Val | Asp | Glu 355 | Leu | Leu | Glu | Ala | Gly 360 |
| Ile | Asn | Val | Thr | Val 365 | Tyr | Asn | Gly | Gln | Leu 370 | Asp | Leu | Ile | Val | Asp 375 |
| Thr | Met | Gly | Gln | Glu 380 | Ala | Trp | Val | Arg | Lys 385 | Leu | Lys | Trp | Pro | Glu 390 |
| Leu | Pro | Lys | Phe | Ser 395 | Gln | Leu | Lys | Trp | Lys 400 | Ala | Leu | Tyr | Ser | Asp 405 |
| Pro | Lys | Ser | Leu | Glu 410 | Thr | Ser | Ala | Phe | Val 415 | Lys | Ser | Tyr | Lys | Asn 420 |
| Leu | Ala | Phe | Tyr | Trp 425 | Ile | Leu | Lys | Ala | Gly 430 | His | Met | Val | Pro | Ser 435 |
| Asp | Gln | Gly | Asp | Met 440 | Ala | Leu | Lys | Met | Met 445 | Arg | Leu | Val | Thr | Gln 450 |
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<211> 1100

<212> DNA

<213> Homo Sapien

<400> 256

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Gly Pro Cys Gly Arg Arg Val Ile Thr Ser Arg Ile Val Gly Gly 35 40 45

Glu Asp Ala Glu Leu Gly Arg Trp Pro Trp Gln Gly Ser Leu Arg
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<211> 314

<212> PRT

<213> Homo Sapien

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                125
                                                         135
Tyr Asp Ile Ala Leu Val Lys Leu Ser Ala Pro Val Thr Tyr Thr
Lys His Ile Gln Pro Ile Cys Leu Gln Ala Ser Thr Phe Glu Phe
                                                         165
Glu Asn Arg Thr Asp Cys Trp Val Thr Gly Trp Gly Tyr Ile Lys
Glu Asp Glu Ala Leu Pro Ser Pro His Thr Leu Gln Glu Val Gln
                185
                                     190
Val Ala Ile Ile Asn Asn Ser Met Cys Asn His Leu Phe Leu Lys
                200
Tyr Ser Phe Arg Lys Asp Ile Phe Gly Asp Met Val Cys Ala Gly
                215
Asn Ala Gln Gly Gly Lys Asp Ala Cys Phe Gly Asp Ser Gly Gly
                                     235
                                                         240
Pro Leu Ala Cys Asn Lys Asn Gly Leu Trp Tyr Gln Ile Gly Val
                                     250
Val Ser Trp Gly Val Gly Cys Gly Arg Pro Asn Arg Pro Gly Val
                                     265
Tyr Thr Asn Ile Ser His His Phe Glu Trp Ile Gln Lys Leu Met
                275
                                     280
                                                         285
Ala Gln Ser Gly Met Ser Gln Pro Asp Pro Ser Trp Pro Leu Leu
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<211> 2427

<212> DNA

<213> Homo Sapien

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<210> 259

<211> 556

<212> PRT

<213> Homo Sapien

<400> 259

Met Gly Leu Gln Ala Cys Leu Leu Gly Leu Phe Ala Leu Ile Leu 1 5 10 15

Ser Gly Lys Cys Ser Tyr Ser Pro Glu Pro Asp Gln Arg Arg Thr

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|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
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| Glu | Leu | Ser | Leu | Thr 50 | Phe | Ala | Leu | Arg | Gln 55 | Gln | Asn | Val | Glu | Arg 60 |
| Leu | Ser | Glu | Leu | Val 65 | Gln | Ala | Val | Ser | Asp 70 | Pro | Ser | Ser | Pro | Gln 75 |
| Tyr | Gly | Lys | Tyr | Leu 80 | Thr | Leu | Glu | Asn | Val 85 | Ala | Asp | Leu | Val | Arg 90 |
| Pro | Ser | Pro | Leu | Thr 95 | Leu | His | Thr | Val | Gln 100 | Lys | Trp | Leu | Leu | Ala 105 |
| Ala | Gly | Ala | Gln | Lys 110 | Cys | His | Ser | Val | Ile 115 | Thr | Gln | Asp | Phe | Leu 120 |
| Thr | Cys | Trp | Leu | Ser 125 | Ile | Arg | Gln | Ala | Glu 130 | Leu | Leu | Leu | Pro | Gly 135 |
| Ala | Glu | Phe | His | His 140 | Tyr | Val | Gly | Gly | Pro 145 | Thr | Glu | Thr | His | Val 150 |
| Val | Arg | Ser | Pro | His 155 | Pro | Tyr | Gln | Leu | Pro 160 | Gln | Ala | Leu | Ala | Pro 165 |
| His | Val | Asp | Phe | Val 170 | Gly | Gly | Leu | His | Arg 175 | Phe | Pro | Pro | Thr | Ser 180 |
| Ser | Leu | Arg | Gln | Arg 185 | Pro | Glu | Pro | Gln | Val 190 | Thr | Gly | Thr | Val | Gly 195 |
| Leu | His | Leu | Gly | Val 200 | Thr | Pro | Ser | Val | Ile 205 | Arg | Lys | Arg | Tyr | Asn 210 |
| Leu | Thr | Ser | Gln | Asp 215 | Val | Gly | Ser | Gly | Thr 220 | Ser | Asn | Asn | Ser | Gln 225 |
| Ala | Cys | Ala | Gln | Phe 230 | Leu | Glu | Gln | Tyr | Phe 235 | His | Asp | Ser | Asp | Leu 240 |
| Ala | Gln | Phe | Met | Arg 245 | Leu | Phe | Gly | Gly | Asn 250 | Phe | Ala | His | Gln | Ala 255 |
| Ser | Val | Ala | Arg | Val 260 | Val | Gly | Gln | Gln | Gly 265 | Arg | Gly | Arg | Ala | Gly 270 |
| Ile | Glu | Ala | Ser | Leu 275 | Asp | Val | Gln | Tyr | Leu 280 | Met | Ser | Ala | Gly | Ala 285 |

| Asn | Ile | Ser | Thr | Trp 290 | Val | Tyr | Ser | Ser | Pro 295 | Gly | Arg | His | Glu | Gly 300 |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| Gln | Glu | Pro | Phe | Leu 305 | Gln | Trp | Leu | Met | Leu 310 | Leu | Ser | Asn | Glu | Ser 315 |
| Ala | Leu | Pro | His | Val 320 | His | Thr | Val | Ser | Tyr 325 | Gly | Asp | Asp | Glu | Asp 330 |
| Ser | Leu | Ser | Ser | Ala 335 | Tyr | Ile | Gln | Arg | Val 340 | Asn | Thr | Glu | Leu | Met 345 |
| Lys | Ala | Ala | Ala | Arg 350 | Gly | Leu | Thr | Leu | Leu 355 | Phe | Ala | Ser | Gly | Asp 360 |
| Ser | Gly | Ala | Gly | Cys 365 | Trp | Ser | Val | Ser | Gly 370 | Arg | His | Gln | Phe | Arg 375 |
| Pro | Thr | Phe | Pro | Ala 380 | Ser | Ser | Pro | Tyr | Val 385 | Thr | Thr | Val | Gly | Gly 390 |
| Thr | Ser | Phe | Gln | Glu 395 | Pro | Phe | Leu | Ile | Thr 400 | Asn | Glu | Ile | Val | Asp 405 |
| Tyr | Ile | Ser | Gly | Gly 410 | Gly | Phe | Ser | Asn | Val 415 | Phe | Pro | Arg | Pro | Ser 420 |
| Tyr | Gln | Glu | Glu | Ala 425 | Val | Thr | Lys | Phe | Leu 430 | Ser | Ser | Ser | Pro | His 435 |
| Leu | Pro | Pro | Ser | Ser 440 | Tyr | Phe | Asn | Ala | Ser 445 | Gly | Arg | Ala | Tyr | Pro 450 |
| Asp | Val | Ala | Ala | Leu 455 | Ser | Asp | Gly | Tyr | Trp 460 | Val | Val | Ser | Asn | Arg 465 |
| Val | Pro | Ile | Pro | Trp 470 | Val | Ser | Gly | Thr | Ser 475 | Ala | Ser | Thr | Pro | Val 480 |
| Phe | Gly | Gly | Ile | Leu 485 | Ser | Leu | Ile | Asn | Glu 490 | His | Arg | Ile | Leu | Ser 495 |
| Gly | Arg | Pro | Pro | Leu 500 | Gly | Phe | Leu | Asn | Pro 505 | Arg | Leu | Tyr | Gln | Gln 510 |
| His | Gly | Ala | Gly | Leu 515 | Phe | Asp | Val | Thr | Arg 520 | Gly | Cys | His | Glu | Ser 525 |
| Cys | Leu | Asp | Glu | Glu 530 | Val | Glu | Gly | Gln | Gly 535 | Phe | Сув | Ser | Gly | Pro 540 |
| Gly | Trp | Asp | Pro | Val 545 | Thr | Gly | Trp | Gly | Thr 550 | Pro | Thr | Ser | Gln | Leu 555 |

Cys

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<210> 261

<211> 383

<212> PRT

<213> Homo Sapien

<400> 261

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| 1 | | - | | 5 | | | | | 10 | | | | | 15 |

Cys Ala Val Gly Gln Val Ser Pro Tyr Ser Ala Pro Trp Lys Pro 20 25 30

Thr Trp Pro Ala Tyr Arg Leu Pro Val Val Leu Pro Gln Ser Thr 35 40 45

Leu Asn Leu Ala Lys Pro Asp Phe Gly Ala Glu Ala Lys Leu Glu
50 55 60

Val Ser Ser Cys Gly Pro Gln Cys His Lys Gly Thr Pro Leu
65 70 75

Pro Thr Tyr Glu Glu Ala Lys Gln Tyr Leu Ser Tyr Glu Thr Leu 80 85 90

Tyr Ala Asn Gly Ser Arg Thr Glu Thr Gln Val Gly Ile Tyr Ile

95 100 105

Leu Ser Ser Ser Gly Asp Gly Ala Gln His Arg Asp Ser Gly Ser

| Ser | Gly | Lys | Ser | Arg 125 | Arg | Lys | Arg | Gln | Ile 130 | Tyr | Gly | Tyr | Asp | Ser 135 |
|-----|-----|-----|-----|--------------|-----|-----|-----|-----|------------|-----|-------|-----|-------|------------|
| Arg | Phe | Ser | Ile | Phe 140 | Gly | Lys | Asp | Phe | Leu 145 | Leu | Asn | Tyr | Pro | Phe 150 |
| Ser | Thr | Ser | Val | Lys 155 | Leu | Ser | Thr | Gly | Cys 160 | Thr | Gly | Thr | Leu | Val 165 |
| Ala | Glu | Lys | His | Val 170 | Leu | Thr | Ala | Ala | His 175 | Cys | Ile | His | Asp | Gly 180 |
| Lys | Thr | Tyr | Val | Lys 185 | Gly | Thr | Gln | Lys | Leu 190 | Arg | Val | Gly | Phe | Leu 195 |
| Lys | Pro | Lys | Phe | Lys 200 | Asp | Gly | Gly | Arg | Gly 205 | Ala | Asn | Asp | Ser | Thr 210 |
| Ser | Ala | Met | Pro | Glu 215 | Gln | Met | Lys | Phe | Gln 220 | Trp | Ile | Arg | Val | Lys 225 |
| Arg | Thr | His | Val | Pro 230 | Lys | Gly | Trp | Ile | Lys 235 | Gly | Asn | Ala | Asn | Asp 240 |
| Ile | Gly | Met | Asp | Tyr 245 | Asp | Tyr | Ala | Leu | Leu 250 | Glu | Leu | Lys | Lys | Pro 255 |
| His | Lys | Arg | Lys | Phe 260 | Met | Lys | Ile | Gly | Val 265 | Ser | Pro | Pro | Ala | Lys 270 |
| Gln | Leu | Pro | Gly | Gly 275 | | Ile | His | Phe | Ser 280 | Gly | Tyr | Asp | Asn | Asp 285 |
| Arg | Pro | Gly | Asn | Leu 290 | Val | Tyr | Arg | Phe | Cys 295 | Asp | Val | Lys | Asp | Glu 300 |
| Thr | Tyr | Asp | Leu | Leu 305 | | Gln | Gln | Cys | Asp 310 | | Gln | Pro | Gly | Ala 315 |
| Ser | Gly | Ser | Gly | Val 320 | | Val | Arg | Met | Trp 325 | | Arg | Gln | Gln | Gln 330 |
| Lys | Trp | Glu | Arg | Lys 335 | | Ile | Gly | Ile | Phe 340 | | Gly | His | Gln | Trp 345 |
| Val | Asp | Met | Asn | . Gly 350 | | Pro | Gln | Asp | Phe 355 | | . Val | Ala | . Val | Arg 360 |
| Ile | Thr | Pro | Leu | Lys 365 | | Ala | Gln | Ile | Cys 370 | | Trp | ıle | . Lys | Gly 375 |
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<213> Homo Sapien

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<210> 263

<211> 317

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170

175

255

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Gly Ser Ile Gln Asp Gly Val Pro Leu Pro His Pro Gln Thr Leu
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                 185
Gln Lys Leu Lys Val Pro Ile Ile Asp Ser Glu Val Cys Ser His
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Leu Tyr Trp Arg Gly Ala Gly Gln Gly Pro Ile Thr Glu Asp Met
                                     220
Leu Cys Ala Gly Tyr Leu Glu Gly Glu Arg Asp Ala Cys Leu Gly
Asp Ser Gly Gly Pro Leu Met Cys Gln Val Asp Gly Ala Trp Leu
                                     250
Leu Ala Gly Ile Ile Ser Trp Gly Glu Gly Cys Ala Glu Arg Asn
                 260
                                     265
Arg Pro Gly Val Tyr Ile Ser Leu Ser Ala His Arg Ser Trp Val
                                     280
Glu Lys Ile Val Gln Gly Val Gln Leu Arg Gly Arg Ala Gln Gly
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Gly Gly Ala Leu Arg Ala Pro Ser Gln Gly Ser Gly Ala Ala Ala
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<220>

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<400> 265 gcagaggtgt ctaaggttg 19

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<210> 266 <211> 24

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 agetetagae caatgeeage ttee 24
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<210> 279
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<212> PRT

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<400> 285

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Gln Val Ser Pro Thr Ala Ser Asp Met Leu His Met Arg Trp Asp
50 55 60

Glu Glu Leu Ala Ala Phe Ala Lys Ala Tyr Ala Arg Gln Cys Val
65 70 75

Trp Gly His Asn Lys Glu Arg Gly Arg Gly Glu Asn Leu Phe
80 85 90

Ala Ile Thr Asp Glu Gly Met Asp Val Pro Leu Ala Met Glu Glu 95 100 105

Trp His His Glu Arg Glu His Tyr Asn Leu Ser Ala Ala Thr Cys
110 115 120

Ser Pro Gly Gln Met Cys Gly His Tyr Thr Gln Val Val Trp Ala 125 130 135

| Lys | Thr | Glu | Arg | Ile 140 | Gly | Cys | Gly | Ser | His 145 | Phe | Cys | Glu | Lys | Leu 150 |
|-----|-----|-----|-------|------------|-----|-------|-----|-----|--------------|-----|-----|-----|-----|------------|
| Gln | Gly | Val | Glu | Glu 155 | Thr | Asn | Ile | Glu | Leu 160 | Leu | Val | Cys | Asn | Tyr 165 |
| Glu | Pro | Pro | Gly | Asn 170 | Val | Lys | Gly | Lys | Arg 175 | Pro | Tyr | Gln | Glu | Gly 180 |
| Thr | Pro | Cys | Ser | Gln 185 | Cys | Pro | Ser | Gly | Tyr 190 | His | Cys | Lys | Asn | Ser 195 |
| Leu | Cys | Glu | Pro | Ile 200 | Gly | Ser | Pro | Glu | Asp 205 | Ala | Gln | Asp | Leu | Pro 210 |
| Tyr | Leu | Val | Thr | Glu 215 | Ala | Pro | Ser | Phe | Arg 220 | Ala | Thr | Glu | Ala | Ser 225 |
| Asp | Ser | Arg | Lys | Met 230 | Gly | Thr | Pro | Ser | Ser 235 | Leu | Ala | Thr | Gly | Ile 240 |
| Pro | Ala | Phe | Leu | Val 245 | Thr | Glu | Val | Ser | Gly 250 | Ser | Leu | Ala | Thr | Lys 255 |
| Ala | Leu | Pro | Ala | Val 260 | Glu | Thr | Gln | Ala | Pro 265 | Thr | Ser | Leu | Ala | Thr 270 |
| Lys | Asp | Pro | Pro | Ser 275 | Met | Ala | Thr | Glu | Ala 280 | Pro | Pro | Cys | Val | Thr 285 |
| Thr | Glu | Val | Pro | Ser 290 | Ile | Leu | Ala | Ala | His 295 | Ser | Leu | Pro | Ser | Leu 300 |
| Asp | Glu | Glu | Pro | Val 305 | Thr | Phe | Pro | Lys | Ser 310 | | His | Val | Pro | Ile 315 |
| Pro | Lys | Ser | Ala | Asp 320 | Lys | Val | Thr | Asp | Lys 325 | | Lys | Val | Pro | Ser 330 |
| Arg | Ser | Pro | Glu | Asn 335 | | Leu | Asp | Pro | Lys 340 | | Ser | Leu | Thr | Gly 345 |
| Ala | Arg | Glu | Leu | Leu 350 | | His | Ala | Gln | . Glu 355 | Glu | Ala | Glu | Ala | Glu 360 |
| Ala | Glu | Leu | Pro | Pro 365 | | Ser | Glu | Val | Leu 370 | | Ser | Val | Phe | Pro 375 |
| | | |) Lys | 380 | | | | | 385 | | | | | 390 |
| Gly | His | Thr | Ser | Ser | | s Ser | Leu | Pro | Asn 400 | | Pro | Asn | Thr | Ser 405 |

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 Ser Leu Pro Gly Ala Glu Gly Pro Asp Lys Pro Ser Val Val Ser
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 Gly Leu Asn Ser Gly Pro Gly His Val Trp Gly Pro Leu Leu Gly
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<213> Homo Sapien

<400> 290

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Ile Ser Arg Pro Asp Leu Ser His Asn Arg Leu Ser Phe Ile Lys

| Ala | Ser | Ser | Met | Ser 35 | His | Leu | Gln | Ser | Leu 40 | Arg | Glu | Val | Lys | Leu 45 |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| Asn | Asn | Asn | Glu | Leu 50 | Glu | Thr | Ile | Pro | Asn 55 | Leu | Gly | Pro | Val | Ser 60 |
| Ala | Asn | Ile | Thr | Leu 65 | Leu | Ser | Leu | Ala | Gly 70 | Asn | Arg | Ile | Val | Glu 75 |
| Ile | Leu | Pro | Glu | His 80 | Leu | Lys | Glu | Phe | Gln 85 | Ser | Leu | Glu | Thr | Leu 90 |
| Asp | Leu | Ser | Ser | Asn 95 | Asn | Ile | Ser | Glu | Leu 100 | Gln | Thr | Ala | Phe | Pro 105 |
| Ala | Leu | Gln | Leu | Lys 110 | Tyr | Leu | Tyr | Leu | Asn 115 | Ser | Asn | Arg | Val | Thr 120 |
| Ser | Met | Glu | Pro | Gly 125 | Tyr | Phe | Asp | Asn | Leu 130 | Ala | Asn | Thr | Leu | Leu 135 |
| Val | Leu | Lys | Leu | Asn 140 | Arg | Asn | Arg | Ile | Ser 145 | Ala | Ile | Pro | Pro | Lys 150 |
| Met | Phe | Lys | Leu | Pro | Gln | Leu | Gln | His | Leu | Glu | Leu | Asn | Arg | Asn |
| | | | | 155 | | | | | 160 | | | | | 165 |
| Lys | Ile | Lys | Asn | Val 170 | Asp | Gly | Leu | Thr | Phe 175 | Gln | Gly | Leu | Gly | Ala 180 |
| Leu | Lys | Ser | Leu | Lys 185 | Met | Gln | Arg | Asn | Gly 190 | Val | Thr | Lys | Leu | Met 195 |
| Asp | Gly | Ala | Phe | Trp 200 | Gly | Leu | Ser | Asn | Met 205 | Glu | Ile | Leu | Gln | Leu 210 |
| Asp | His | Asn | Asn | Leu 215 | Thr | Glu | Ile | Thr | Lys 220 | Gly | Trp | Leu | Tyr | Gly 225 |
| Leu | Leu | Met | Leu | Gln 230 | Glu | Leu | His | Leu | Ser 235 | Gln | Asn | Ala | Ile | Asn 240 |
| Arg | Ile | Ser | Pro | Asp 245 | Ala | Trp | Glu | Phe | Cys 250 | Gln | Lys | Leu | Ser | Glu 255 |
| Leu | Asp | Leu | Thr | Phe 260 | Asn | His | Leu | Ser | Arg 265 | Leu | Asp | Asp | Ser | Ser 270 |
| Phe | Leu | Gly | Leu | Ser 275 | Leu | Leu | Asn | Thr | Leu 280 | | Ile | Gly | Asn | Asn 285 |
| Ara | Val | Ser | Tyr | Ile | Ala | Asp | Cys | Ala | Phe | Arg | Gly | Leu | Ser | Ser |

| | | | | 290 | | | | | 295 | | | | | 300 |
|-----|------|-----|-----|------------|-----|-----|-----|-----|------------|-----|----------|-------|-----|------------|
| Leu | Lys | Thr | Leu | Asp 305 | Leu | Lys | Asn | Asn | Glu 310 | Ile | Ser | Trp | Thr | Ile 315 |
| Glu | Asp | Met | Asn | Gly 320 | Ala | Phe | Ser | Gly | Leu 325 | Asp | Lys | Leu | Arg | Arg 330 |
| Leu | Ile | Leu | Gln | Gly 335 | Asn | Arg | Ile | Arg | Ser 340 | Ile | Thr | Lys | Lys | Ala 345 |
| Phe | 'Thr | Gly | Leu | Asp 350 | Ala | Leu | Glu | His | Leu 355 | Asp | Leu | Ser | Asp | Asn 360 |
| Ala | Ile | Met | Ser | Leu 365 | Gln | Gly | Asn | Ala | Phe 370 | Ser | Gln | Met | Lys | Lys 375 |
| Leu | Gln | Gln | Leu | His 380 | Leu | Asn | Thr | Ser | Ser 385 | Leu | Leu | Cys | Asp | Cys 390 |
| Gln | Leu | Lys | Trp | Leu 395 | Pro | Gln | Trp | Val | Ala 400 | Glu | Asn | Asn | Phe | Gln 405 |
| Ser | Phe | Val | Asn | Ala 410 | Ser | Cys | Ala | His | Pro 415 | Gln | Leu | Leu | Lys | Gly 420 |
| Arg | Ser | Ile | Phe | Ala 425 | Val | Ser | Pro | Asp | Gly 430 | Phe | Val | Cys | Asp | Asp 435 |
| Phe | Pro | Lys | Pro | Gln 440 | Ile | Thr | Val | Gln | Pro 445 | Glu | Thr | Gln | Ser | Ala 450 |
| | | | | 455 | | | | Ile | 460 | | | | | 465 |
| Ser | Asp | Ser | Pro | | Thr | Phe | Ala | Trp | | Lys | Asp | Asn | Glu | |
| | | | _ | 470 | | 7 | _ | | 475 | 1 | . | 3 | 77- | 480 |
| Leu | His | Asp | Ala | Glu 485 | Met | Glu | Asn | Tyr | A1a 490 | His | ьeu | Arg | Ala | Gln 495 |
| Gly | Gly | Glu | Val | Met 500 | Glu | Tyr | Thr | Thr | Ile 505 | Leu | Arg | Leu | Arg | Glu 510 |
| Val | Glu | Phe | Ala | Ser 515 | Glu | Gly | Lys | Tyr | Gln 520 | | Val | Ile | Ser | Asn 525 |
| His | Phe | Gly | Ser | Ser 530 | | Ser | Val | Lys | Ala 535 | | Leu | . Thr | Val | Asn 540 |
| Met | Leu | Pro | Ser | Phe 545 | | Lys | Thr | Pro | Met 550 | | Leu | Thr | Ile | Arg 555 |

| Ala | Gly | Ala | Met | Ala 560 | Arg | Leu | Glu | Cys | Ala 565 | Ala | Val | GIŸ | Hıs | Pro 570 |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-------|------------------------|
| Ala | Pro | Gln | Ile | Ala 575 | Trp | Gln | Lys | Asp | Gly 580 | Gly | Thr | Asp | Phe | Pro 585 |
| Ala | Ala | Arg | Glu | Arg 590 | Arg | Met | His | Val | Met 595 | Pro | Glu | Asp | Asp | Val 600 |
| Phe | Phe | Ile | Val | Asp 605 | Val | Lys | Ile | Glu | Asp 610 | Ile | Gly | Val | Tyr | Ser 615 |
| Cys | Thr | Ala | Gln | Asn 620 | Ser | Ala | Gly | Ser | Ile 625 | Ser | Ala | Asn | Ala | Thr 630 |
| Leu | Thr | Val | Leu | Glu 635 | Thr | Pro | Ser | Phe | Leu 640 | Arg | Pro | Leu | Leu | Asp 645 |
| Arg | Thr | Val | Thr | Lys 650 | Gly | Glu | Thr | Ala | Val 655 | Leu | Gln | Cys | Ile | Ala 660 |
| Gly | Gly | Ser | Pro | Pro 665 | Pro | Lys | Leu | Asn | Trp 670 | Thr | Lys | Asp | Asp | Ser 675 |
| Pro | Leu | Val | Val | Thr 680 | Glu | Arg | His | Phe | Phe 685 | Ala | Ala | Gly | Asn | Gln 690 |
| Leu | Leu | Ile | Ile | Val 695 | Asp | Ser | Asp | Val | Ser 700 | Asp | Ala | Gly | Lys | Tyr 705 |
| Thr | Cys | Glu | Met | Ser 710 | Asn | Thr | Leu | Gly | Thr 715 | Glu | Arg | Gly | Asn | Val 720 |
| Arg | Leu | Ser | Val | Ile 725 | Pro | Thr | Pro | Thr | Cys 730 | Asp | Ser | Pro | Gln | Met 735 |
| Thr | Ala | Pro | Ser | Leu 740 | Asp | Asp | Asp | Gly | Trp 745 | Ala | Thr | Val | Gly | Val 750 |
| Val | Ile | Ile | Ala | Val 755 | | Cys | Cys | Val | Val 760 | Gly | Thr | Ser | Leu | Val 765 |
| Trp | Val | Val | Ile | Ile 770 | Tyr | His | Thr | Arg | Arg 775 | Arg | Asn | Glu | Asp | Суя 780 |
| Ser | Ile | Thr | Asn | | | Glu | Thr | Asn | | Pro | Ala | Asp | Ile | |
| | | | | 785 | | | | | 790 | | | | | 795 |
| Ser | Tyr | Leu | Ser | Ser 800 | | Gly | Thr | Leu | Ala 805 | Asp | Arg | Gln | . Asp | Gl ₃ 810 |

Tyr Val Ser Ser Glu Ser Gly Ser His His Gln Phe Val Thr Ser Ser Gly Ala Gly Phe Phe Leu Pro Gln His Asp Ser Ser Gly Thr 830 Cys His Ile Asp Asn Ser Ser Glu Ala Asp Val Glu Ala Ala Thr Asp Leu Phe Leu Cys Pro Phe Leu Gly Ser Thr Gly Pro Met Tyr 860 Leu Lys Gly Asn Val Tyr Gly Ser Asp Pro Phe Glu Thr Tyr His 880 Thr Gly Cys Ser Pro Asp Pro Arg Thr Val Leu Met Asp His Tyr 895 890 Glu Pro Ser Tyr Ile Lys Lys Lys Glu Cys Tyr Pro Cys Ser His Pro Ser Glu Glu Ser Cys Glu Arg Ser Phe Ser Asn Ile Ser Trp 930 Pro Ser His Val Arg Lys Leu Leu Asn Thr Ser Tyr Ser His Asn 935 Glu Gly Pro Gly Met Lys Asn Leu Cys Leu Asn Lys Ser Ser Leu 960 955 Asp Phe Ser Ala Asn Pro Glu Pro Ala Ser Val Ala Ser Ser Asn 970 965 Ser Phe Met Gly Thr Phe Gly Lys Ala Leu Arg Arg Pro His Leu 985 Asp Ala Tyr Ser Ser Phe Gly Gln Pro Ser Asp Cys Gln Pro Arg 1005 995 Ala Phe Tyr Leu Lys Ala His Ser Ser Pro Asp Leu Asp Ser Gly 1015 1010 Ser Glu Glu Asp Gly Lys Glu Arg Thr Asp Phe Gln Glu Glu Asn 1030 His Ile Cys Thr Phe Lys Gln Thr Leu Glu Asn Tyr Arg Thr Pro 1045 Asn Phe Gln Ser Tyr Asp Leu Asp Thr 1055

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Leu Ala Leu Gl
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n \$35\$ 40 \$40\$

Thr Cys Pro Ser Val Cys Ser Cys Ser Asn Gln Phe Ser Lys Val
50 55 60

Ile Cys Val Arg Lys Asn Leu Arg Glu Val Pro Asp Gly Ile Ser
65 70 75

Thr Asn Thr Arg Leu Leu Asn Leu His Glu Asn Gln Ile Gln Ile 80 85 90

Ile Lys Val Asn Ser Phe Lys His Leu Arg His Leu Glu Ile Leu 95 100 105

Gln Leu Ser Arg Asn His Ile Arg Thr Ile Glu Ile Gly Ala Phe 110 115 120

Asn Gly Leu Ala Asn Leu Asn Thr Leu Glu Leu Phe Asp Asn Arg 125 130 135

Leu Thr Thr Ile Pro Asn Gly Ala Phe Val Tyr Leu Ser Lys Leu
140 145 150

Lys Glu Leu Trp Leu Arg Asn Asn Pro Ile Glu Ser Ile Pro Ser

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| Glu | Leu | Lys | Arg | Leu 185 | Ser | Tyr | Ile | Ser | Glu 190 | Gly | Ala | Phe | Glu | Gly 195 |
| Leu | Ser | Asn | Leu | Arg 200 | Tyr | Leu | Asn | Leu | Ala 205 | Met | Cys | Asn | Leu | Arg 210 |
| Glu | Ile | Pro | Asn | Leu 215 | Thr | Pro | Leu | Ile | Lys 220 | Leu | Asp | Glu | Leu | Asp 225 |
| Leu | Ser | Gly | Asn | His 230 | Leu | Ser | Ala | Ile | Arg 235 | Pro | Gly | Ser | Phe | Gln 240 |
| Gly | Leu | Met | His | Leu 245 | Gln | Lys | Leu | Trp | Met 250 | Ile | Gln | Ser | Gln | Ile 255 |
| Gln | Val | Ile | Glu | Arg 260 | Asn | Ala | Phe | Asp | Asn 265 | Leu | G1n | Ser | Leu | Val 270 |
| Glu | Ile | Asn | Leu | Ala 275 | His | Asn | Asn | Leu | Thr 280 | Leu | Leu | Pro | His | Asp 285 |
| Leu | Phe | Thr | Pro | Leu 290 | His | His | Leu | Glu | Arg 295 | Ile | His | Leu | His | His 300 |
| Asn | Pro | Trp | Asn | Cys 305 | Asn | Cys | Asp | Ile | Leu 310 | Trp | Leu | Ser | Trp | Trp 315 |
| Ile | Lys | Asp | Met | Ala 320 | Pro | Ser | Asn | Thr | Ala 325 | Cys | Cys | Ala | Arg | Cys 330 |
| Asn | Thr | Pro | Pro | Asn 335 | Leu | Lys | Gly | Arg | Tyr 340 | | Gly | Glu | Leu | Asp 345 |
| Gln | Asn | Tyr | Phe | Thr 350 | Cys | Tyr | Ala | Pro | Val 355 | | Val | Glu | Pro | Pro 360 |
| Ala | Asp | Leu | Asn | Val 365 | | Glu | Gly | Met | Ala 370 | | Glu | Leu | . Lys | Cys 375 |
| Arg | Ala | Ser | Thr | Ser 380 | | Thr | Ser | Val | Ser 385 | | Ile | Thr | Pro | Asn 390 |
| Gly | Thr | . Val | Met | Thr 395 | | Gly | Ala | Tyr | Lys 400 | | Arg | Ile | Ala | Val 405 |
| Leu | Ser | Asp | Gly | Thr 410 | | Asn | Phe | Thr | Asn 415 | | Thr | Val | . Gln | Asp 420 |

| Thr | Gly | Met | Tyr | Thr 425 | Cys | Met | Val | Ser | Asn 430 | Ser | Val | Gly | Asn | Thr 435 |
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| Thr | Ala | Ser | Ala | Thr 440 | Leu | Asn | Val | Thr | Ala 445 | Ala | Thr | Thr | Thr | Pro 450 |
| Phe | Ser | Tyr | Phe | Ser 455 | Thr | Val | Thr | Val | Glu 460 | Thr | Met | Glu | Pro | Ser 465 |
| Gln | Asp | Glu | Ala | Arg 470 | Thr | Thr | Asp | Asn | Asn 475 | Val | Gly | Pro | Thr | Pro 480 |
| Val | Val | Asp | Trp | Glu 485 | Thr | Thr | Asn | Val | Thr 490 | Thr | Ser | Leu | Thr | Pro 495 |
| Gln | Ser | Thr | Arg | Ser 500 | Thr | Glu | Lys | Thr | Phe 505 | Thr | Ile | Pro | Val | Thr 510 |
| Asp | Ile | Asn | Ser | Gly 515 | Ile | Pro | Gly | Ile | Asp 520 | Glu | Val | Met | Lys | Thr 525 |
| | | | | 530 | | | Phe | | 535 | | | | | 540 |
| | | | | 545 | | | Tyr | | 550 | | | | | 555 |
| | | | | 560 | | | Thr | | 565 | | | | | 570 |
| | | | | 575 | | | | | 580 | | | | | Leu 585 |
| | | | | 590 | | | | | 595 | | | | | Ser 600 |
| | | | | 605 | | | | | 610 | 1 | | | | 615 |
| | | | | 620 | 1 | | | | 625 | • | ı Ile | e Arg | , Met | 630 |
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| Gln | Leu | Lys | Trp | Leu 455 | | Gln | Trp | Val | Ala 460 | | Asn | Asn | Phe | Gln 465 |
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| Arg | Ser | Ile | Phe | Ala 485 | Val | Ser | Pro | Asp | Gly 490 | Phe | Val | Cys | Asp | Asp 495 |
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| Leu | His | Asp | Ala | Glu 545 | Met | Glu | Asn | Tyr | Ala 550 | His | Leu | Arg | Ala | Gln 555 |
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| Lys | Val | Gly | Glu | Val 245 | | Thr | Val | Asp | Leu 250 | | Glu | Ala | Ile | Leu 255 |
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| Туг | . Val | . Cys | s Cys | 305 | | Asn | a Asr | ıle | Thr 310 | | Arg | g Gln | Asp | Glu 315 |
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| Gly | Leu | Cys | Met | Ile 200 | | Val | Ala | Asp | Cys 205 | | Cys | Pro | Ser | Lys 210 |

Arg Arg Pro Gln Pro Tyr Pro Tyr Pro Ser Lys Leu Leu

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| Gly | Thr | Asn | Lys | Asp 260 | Phe | Pro | Gln | Asn | Ala 265 | Ile | Arg | Gln | Arg | Ser 270 | |
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<400> 332

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| мес | гăг | ьeu | тrр | val | Ser | ALA | пеп | шеа | 1100 | HIL | 115 | | 0-1 | 1.5 |
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Thr Asp Leu Ile Tyr Ala Glu Lys Glu Leu Val Gln Ser Leu Lys
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Glu Tyr Ile Leu Val Glu Glu Ala Lys Leu Ser Lys Ile Lys Ser 50 55

Trp Ala Asn Lys Met Glu Ala Leu Thr Ser Lys Ser Ala Ala Asp
65 70 75

Ala Glu Gly Tyr Leu Ala His Pro Val Asn Ala Tyr Lys Leu Val 80 85 90

Lys Arg Leu Asn Thr Asp Trp Pro Ala Leu Glu Asp Leu Val Leu 95 100 105

Gln Asp Ser Ala Ala Gly Phe Ile Ala Asn Leu Ser Val Gln Arg 110 115 120

Gln Phe Phe Pro Thr Asp Glu Asp Glu Ile Gly Ala Ala Lys Ala 125 130 135

Leu Met Arg Leu Gln Asp Thr Tyr Arg Leu Asp Pro Gly Thr Ile 140 145 150

Ser Arg Gly Glu Leu Pro Gly Thr Lys Tyr Gln Ala Met Leu Ser 155 160 165

Val Asp Asp Cys Phe Gly Met Gly Arg Ser Ala Tyr Asn Glu Gly 170 175 180

Asp Tyr Tyr His Thr Val Leu Trp Met Glu Gln Val Leu Lys Gln
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Leu Asp Ala Gly Glu Glu Ala Thr Thr Thr Lys Ser Gln Val Leu 200 205 210

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| Ala | Leu | Glu | Leu | Thr 230 | Arg | Arg | Leu | Leu | Ser 235 | Leu | Asp | Pro | Ser | His 240 |
| Glu | Arg | Ala | Gly | Gly 245 | Asn | Leu | Arg | Tyr | Phe 250 | Glu | Gln | Leu | Leu | Glu 255 |
| Glu | Glu | Arg | Glu | Lys 260 | Thr | Leu | Thr | Asn | Gln 265 | Thr | Glu | Ala | Glu | Leu 270 |
| Ala | Thr | Pro | Glu | Gly 275 | Ile | Tyr | Glu | Arg | Pro 280 | Val | Asp | Tyr | Leu | Pro 285 |
| G l u | Arg | Asp | Val | Tyr 290 | Glu | Ser | Leu | Cys | Arg 295 | Gly | Glu | Gly | Val | Lys 300 |
| Leu | Thr | Pro | Arg | Arg 305 | Gln | Lys | Arg | Leu | Phe 310 | Cys | Arg | Tyr | His | His 315 |
| Gly | .Asn | Arg | Ala | Pro 320 | Gln | Leu | Leu | Ile | Ala 325 | Pro | Phe | Lys | Glu | Glu 330 |
| Asp | Glu | Trp | Asp | Ser 335 | Pro | His | Ile | Val | Arg 340 | Tyr | Tyr | Asp | Val | Met 345 |
| Ser | Asp | Glu | Glu | Ile 350 | Glu | Arg | Ile | Lys | Glu 355 | Ile | Ala | Lys | Pro | Lys 360 |
| Leu | Ala | Arg | Ala | Thr 365 | Val | Arg | Asp | Pro | Lys 370 | Thr | Gly | Val | Leu | Thr 375 |
| Val | Ala | Ser | Tyr | Arg 380 | Va1 | Ser | Lys | Ser | Ser 385 | Trp | Leu | Glu | Glu | Asp 390 |
| Asp | Asp | Pro | Val | Val 395 | Ala | Arg | Val | Asn | Arg 400 | Arg | Met | Gln | His | Ile 405 |
| Thr | Gly | Leu | Thr | Val 410 | Lys | Thr | Ala | Glu | Leu 415 | Leu | Gln | Val | Ala | Asn 420 |
| Tyr | Gly | Val | Gly | Gly 425 | Gln | Tyr | Glu | Pro | His 430 | Phe | Asp | Phe | Ser | Arg 435 |
| Arg | Pro | Phe | Asp | Ser 440 | Gly | Leu | Lys | Thr | Glu 445 | Gly | Asn | Arg | Leu | Ala 450 |
| Thr | Phe | Leu | Asn | Tyr 455 | Met | Ser | Asp | Val | Glu 460 | Ala | Gly | Gly | Ala | Thr 465 |
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<211> 772

<212> PRT

<213> Homo Sapien

<400> 339

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Val Gly Glu Arg Gly Gly Pro Gln Asn Pro Asp Ser Arg Ala Arg
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Leu Asp Gln Ser Asp Glu Asp Phe Lys Pro Arg Ile Val Pro Tyr
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Tyr Arg Asp Pro Asn Lys Pro Tyr Lys Lys Val Leu Arg Thr Arg 80 85 90

Tyr Ile Gln Thr Glu Leu Gly Ser Arg Glu Arg Leu Leu Val Ala

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| Asn Arg Thr Val Ala | | Phe Pro | Arg Leu Leu 130 | Tyr Phe Thr 135 |
| Gly Gln Arg Gly Ala | | Pro Ala | Gly Met Gln 145 | Val Val Ser 150 |
| His Gly Asp Glu Are | | Trp Leu | Met Ser Glu 160 | Thr Leu Arg 165 |
| His Leu His Thr Hi | | Ala Asp | Tyr Asp Trp 175 | Phe Phe Ile 180 |
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| Ala Gly His Leu Se 20 | | Gln Asp | Leu Tyr Leu 205 | Gly Arg Ala 210 |
| Glu Glu Phe Ile Gl 21 | | Glu Gln | Ala Arg Tyr 220 | Cys His Gly 225 |
| Gly Phe Gly Tyr Le 23 | | Arg Ser | Leu Leu Leu 235 | Arg Leu Arg 240 |
| Pro His Leu Asp Gl 24 | | Gly Asp | Ile Leu Ser 250 | Ala Arg Pro 255 |
| Asp Glu Trp Leu Gl 26 | | Leu Ile | Asp Ser Leu 265 | Gly Val Gly 270 |
| Cys Val Ser Gln Hi 27 | | Gln Gln | Tyr Arg Ser 280 | Phe Glu Leu 285 |
| Ala Lys Asn Arg As | | . Lys Glu | Gly Ser Ser 295 | Ala Phe Leu 300 |
| Ser Ala Phe Ala Va | | Val Ser | Glu Gly Thr 310 | Leu Met Tyr 315 |
| Arg Leu His Lys Ar 32 | | · Ala Leu | Glu Leu Glu 325 | Arg Ala Tyr 330 |
| Ser Glu Ile Glu Gl | | Ala Gln | Ile Arg Asr 340 | Leu Thr Val |
| Leu Thr Pro Glu Gl | | Gly Leu | Ser Trp Pro | Val Gly Leu 360 |

| Pro | Ala | Pro | Phe | Thr 365 | Pro | His | Ser | Arg | Phe 370 | Glu | Val | Leu | Gly | Trp 375 |
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| Pro | Lys | Cys | Pro | Leu 395 | Gln | Gly | Ala | Ser | Arg 400 | Ala | Asp | Val | Gly | Asp 405 |
| Ala | Leu | Glu | Thr | Ala 410 | Leu | Glu | Gln | Leu | Asn 415 | Arg | Arg | Tyr | Gln | Pro 420 |
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| Glu | Cys | Val | Thr | Gln 455 | Arg | Gly | His | Arg | Arg 460 | Ala | Leu | Ala | Arg | Arg 465 |
| Val | Ser | Leu | Leu | Arg 470 | Pro | Leu | Ser | Arg | Val 475 | Glu | Ile | Leu | Pro | Met 480 |
| Pro | Tyr | Val | Thr | Glu 485 | Ala | Thr | Arg | Val | Gln 490 | Leu | Val | Leu | Pro | Leu 495 |
| Leu | Val | Ala | Glu | Ala 500 | Ala | Ala | Ala | Pro | Ala 505 | Phe | Leu | Glu | Ala | Phe 510 |
| Ala | Ala | Asn | Val | Leu 515 | Glu | Pro | Arg | Glu | His 520 | Ala | Leu | Leu | Thr | Leu 525 |
| Leu | Leu | . Val | Tyr | Gly 530 | | Arg | Glu | Gly | Gly 535 | Arg | Gly | Ala | Pro | Asp 540 |
| | | | Gly | 545 | | | | | 550 | | | | | 555 |
| | | | Thr | 560 | | | | | 565 | | | | | 570 |
| | | | Val | 575 | | | | | 580 |) | | | | 585 |
| | | | Leu | 590 | ı | | | | 595 | 5 | | | | 600 |
| | | | . Leu | 605 | 5 | | | | 610 |) | | | | 615 |
| Glr | n Ala | a Phe | e Phe | Pro | | l His | Phe | Gln | Glu 625 | | e Asn | Pro | Ala | 630 |

Ser Pro Gln Arg Ser Pro Pro Gly Pro Pro Gly Ala Gly Pro Asp Pro Pro Ser Pro Pro Gly Ala Asp Pro Ser Arg Gly Ala Pro Ile 650 655 Gly Gly Arg Phe Asp Arg Gln Ala Ser Ala Glu Gly Cys Phe Tyr 670 Asn Ala Asp Tyr Leu Ala Ala Arg Ala Arg Leu Ala Gly Glu Leu Ala Gly Gln Glu Glu Glu Ala Leu Glu Gly Leu Glu Val Met 700 Asp Val Phe Leu Arg Phe Ser Gly Leu His Leu Phe Arg Ala Val 710 715 Glu Pro Gly Leu Val Gln Lys Phe Ser Leu Arg Asp Cys Ser Pro 725 Arg Leu Ser Glu Glu Leu Tyr His Arg Cys Arg Leu Ser Asn Leu 745 Glu Gly Leu Gly Gly Arg Ala Gln Leu Ala Met Ala Leu Phe Glu 765 Gln Glu Gln Ala Asn Ser Thr 770

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<212> DNA

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| Ser | Ile | Phe | Cys | Ala 20 | Leu | Ile | Thr | Met | Leu 25 | Gly | His | Ile | Arg | Ile 30 |
| Gly | His | Gly | Asn | Arg 35 | Met | His | His | His | Glu 40 | His | His | His | Leu | Gln 45 |
| Ala | Pro | Asn | Lys | Glu 50 | Asp | Ile | Leu | Lys | Ile 55 | Ser | Glu | Asp | Glu | Arg 60 |
| Met | Glu | Leu | Ser | Lys 65 | Ser | Phe | Arg | Val | Туг 70 | Cys | Ile | Ile | Leu | Val 75 |
| Lys | Pro | Lys | Asp | Val 80 | Ser | Leu | Trp | Ala | Ala 85 | Val | Lys | Glu | Thr | Trp 90 |
| Thr | Lys | His | Cys | Asp 95 | Lys | Ala | Glu | Phe | Phe 100 | Ser | Ser | Glu | Asn | Val 105 |
| Lys | Val | Phe | Glu | Ser 110 | Ile | Asn | Met | Asp | Thr 115 | Asn | Asp | Met | Trp | Leu 120 |
| Met | Met | Arg | Lys | Ala 125 | Tyr | Lys | Tyr | Ala | Phe 130 | Asp | Lys | Tyr | Arg | Asp 135 |
| Gln | Tyr | Asn | Trp | Phe 140 | Phe | Leu | Ala | Arg | Pro 145 | | Thr | Phe | Ala | Ile 150 |
| Ile | Glu | Asn | Leu | Lys 155 | | Phe | Leu | Leu | Lys 160 | | Asp | Pro | Ser | Gln 165 |
| Pro | Phe | Tyr | Leu | Gly 170 | | Thr | Ile | Lys | Ser 175 | | Asp | Leu | Glu | Tyr 180 |
| Val | Gly | Met | Glu | Gly 185 | | Ile | Val | Leu | Ser 190 | Val | Glu | . Ser | Met | Lys 195 |
| Arg | Leu | Asn | Ser | Leu 200 | | . Asn | . Ile | Pro | Glu 205 | | Сув | Pro | Glu | Gln 210 |
| Gly | Gly | Met | . Ile | 215 | | Ile | Ser | Glu | 220 | | Glr | l Leu | Ala | Val 225 |
| Суз | Leu | Lys | Tyr | 230 | | val | Phe | e Ala | Glu 235 | ı Asr | n Alá | a Glu | ı Asp | Ala 240 |
| Asp | Gly | Lys | a Asp | Val 245 | | a Asr | Thr | Lys | Ser 250 | | . Gly | / Leu | ı Ser | : Ile 255 |
| Lvs | : Glu | ı Ala | a Met | Thr | r Tyr | His | Pro |) Asr | ı Glr | ı Val | . Val | L Glu | ı Gly | 7 Cys |

270

315

260 265 Cys Ser Asp Met Ala Val Thr Phe Asn Gly Leu Thr Pro Asn Gln 280 275 Met His Val Met Met Tyr Gly Val Tyr Arg Leu Arg Ala Phe Gly 290 295 His Ile Phe Asn Asp Ala Leu Val Phe Leu Pro Pro Asn Gly Ser 310 Asp Asn Asp <210> 342 <211> 23 <212> DNA <213> Artificial Sequence <220> <223> Synthetic Oligonucleotide Probe <400> 342 tccccaagcc gttctagacg cgg 23 <210> 343 <211> 18 <212> DNA <213> Artificial Sequence <220> <223> Synthetic Oligonucleotide Probe <400> 343 ctggttcttc cttgcacg 18 <210> 344 <211> 28 <212> DNA <213> Artificial Sequence <223> Synthetic Oligonucleotide Probe <400> 344 gcccaaatgc cctaaggcgg tatacccc 28 <210> 345 <211> 50 <212 > DNA <213 > Artificial Sequence <220>

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atttctcagt gcctgtttca tcaccagatg tgttgtgaca tttcgcatct 250
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1 5 10 15

Cys Phe Ser Ser Gln Met Phe Leu Trp Thr Val Ala Gly Ile Pro $20 \hspace{1cm} 25 \hspace{1cm} 30$

Ile Leu Phe Leu Ser Ala Cys Phe Ile Thr Arg Cys Val Val Thr 35 40 45

Phe Arg Ile Phe Gln Thr Cys Asp Glu Lys Lys Phe Gln Leu Pro 50 55 60

Glu Asn Phe Thr Glu Leu Ser Cys Tyr Asn Tyr Gly Ser Gly Ser
65 70 75

Val Lys Asn Cys Cys Pro Leu Asn Trp Glu Tyr Phe Gln Ser Ser 80 · 85 90

Cys Tyr Phe Phe Ser Thr Asp Thr Ile Ser Trp Ala Leu Ser Leu 95 100 105

Lys Asn Cys Ser Ala Met Gly Ala His Leu Val Val Ile Asn Ser 110 115 120

Gln Glu Glu Gln Phe Leu Ser Tyr Lys Lys Pro Lys Met Arg 125 130 135

Glu Phe Phe Ile Gly Leu Ser Asp Gln Val Val Glu Gly Gln Trp 140 145 150

Gln Trp Val Asp Gly Thr Pro Leu Thr Lys Ser Leu Ser Phe Trp
155 160 165

Asp Val Gly Glu Pro Asn Asn Ile Ala Thr Leu Glu Asp Cys Ala 170 175 180

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                                      205
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35 40 45

Phe Glu Ser Val Glu Leu Ser Cys Ile Ile Thr Asp Ser Gln Thr
50 55 60

Ser Asp Pro Arg Ile Glu Trp Lys Lys Ile Gln Asp Glu Gln Thr
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Thr Tyr Val Phe Phe Asp Asn Lys Ile Gln Gly Asp Leu Ala Gly 80 85 90

Arg Ala Glu Ile Leu Gly Lys Thr Ser Leu Lys Ile Trp Asn Val 95 100 105

Thr Arg Arg Asp Ser Ala Leu Tyr Arg Cys Glu Val Val Ala Arg 110 115 120

Asn Asp Arg Lys Glu Ile Asp Glu Ile Val Ile Glu Leu Thr Val 125 130 135

Gln Val Lys Pro Val Thr Pro Val Cys Arg Val Pro Lys Ala Val 140 145

Pro Val Gly Lys Met Ala Thr Leu His Cys Gln Glu Ser Glu Gly
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His Pro Arg Pro His Tyr Ser Trp Tyr Arg Asn Asp Val Pro Leu 170 175 180

Pro Thr Asp Ser Arg Ala Asn Pro Arg Phe Arg Asn Ser Ser Phe 185 190 195

| His | Leu | Asn | Ser | Glu 200 | Thr | Gly | Thr | Leu | Val 205 | Phe | Thr | Ala | Val | His 210 |
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| Gly | Ser | Ala | Arg | Cys 230 | Glu | Glu | Gln | Glu | Met 235 | Glu | Val | Tyr | Asp | Leu 240 |
| Asn | Ile | Gly | Gly | Ile 245 | Ile | Gly | Gly | Val | Leu 250 | Val | Val | Leu | Ala | Val 255 |
| Leu | Ala | Leu | Ile | Thr 260 | Leu | Gly | Ile | Cys | Cys 265 | Ala | Tyr | Arg | Arg | Gly 270 |
| Tyr | Phe | Ile | Asn | Asn | Lys | Gln | Asp | Gly | Glu | Ser | Tyr | Lys | Asn | Pro |
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| Gly | Lys | Pro | Asp | Gly 290 | Val | Asn | Tyr | Ile | Arg 295 | Thr | Asp | Glu | Glu | Gly 300 |
| Asp | Phe | Arg | His | Lys 305 | Ser | Ser | Phe | Val | Ile 310 | | | | | |